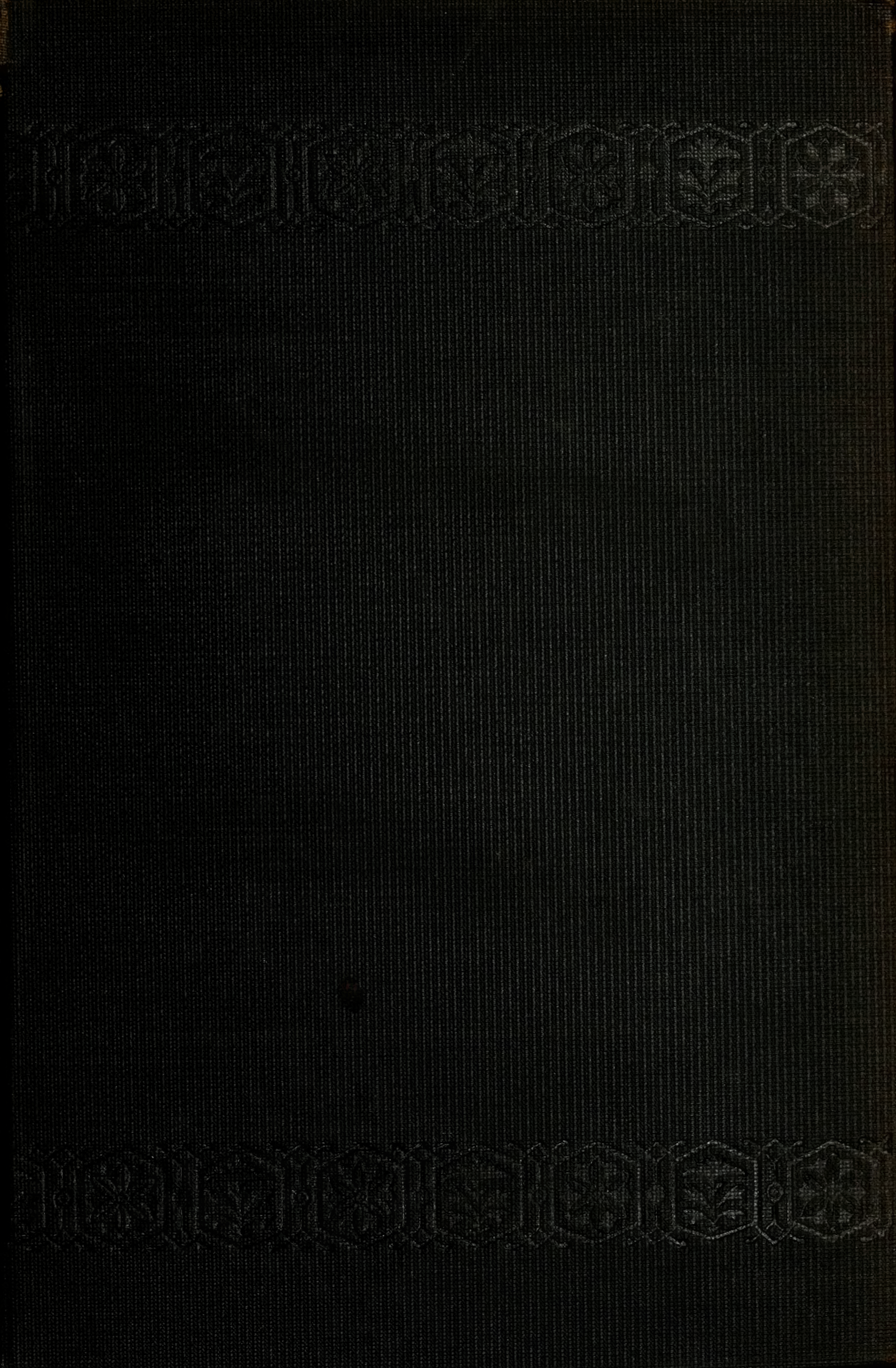

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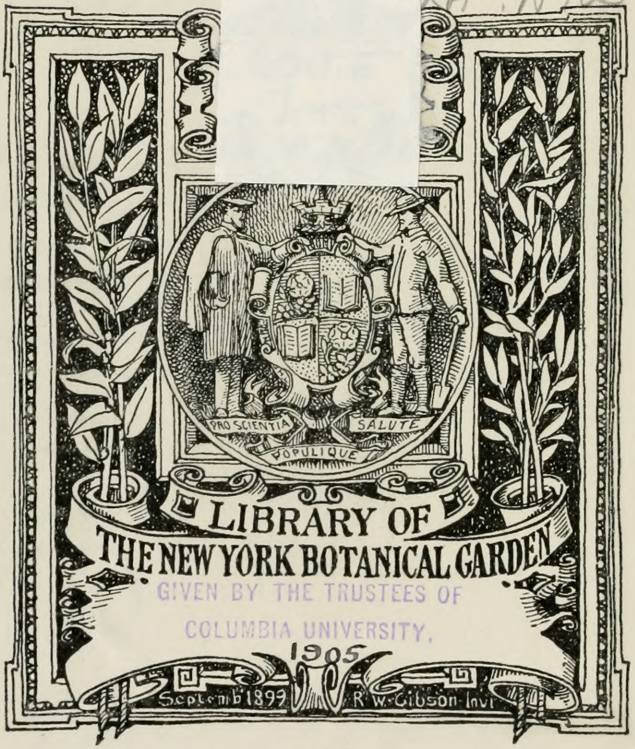

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1905

JAMES E. McDONALD.

FIFTY-FIRST ANNUAL REPORT

OF THE

Indiana State Board of Agriculture

VOLUME XLIII—1901-1902

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Proceedings of the Annual Meeting, 1902 ; Reports of County and District Societies, State Meetings of Swine Breeders, Wool Growers, Corn Growers' Association, Farmers' Institutes, Experiment Station, Farmers' Insurance Union, Statistics on Vegetables and Cereals, State Dairy Association, etc., etc.

TO THE GOVERNOR

INDIANAPOLIS:
WM. B. BURFORD, CONTRACTOR FOR STATE PRINTING AND BINDING.
1903.

XA
.N725
51st Report
1903

THE STATE OF INDIANA,
EXECUTIVE DEPARTMENT,
INDIANAPOLIS, January 9, 1903.

Received by the Governor, examined and referred to the Auditor of State for verification of the financial statement.

OFFICE OF AUDITOR OF STATE,
INDIANAPOLIS, January 9, 1903.

The within report, so far as the same relates to moneys drawn from the State Treasury, has been examined and found correct.

W. H. HART,
Auditor of State.

January 10, 1903.

Returned by the Auditor of State, with above certificate, and transmitted to Secretary of State for publication, upon the order of the Board of Commissioners of Public Printing and Binding.

CHAS. E. WILSON,
Private Secretary.

Filed in the office of the Secretary of State of the State of Indiana, January 12, 1903.

UNION B. HUNT,
Secretary of State.

Received the within report and delivered to the printer this 25th day of September, 1903.

THOS. J. CARTER,
Clerk Printing Bureau.

INDIANA STATE BOARD OF AGRICULTURE.

INDIANAPOLIS, IND., August 26, 1903.

To the HONORABLE WINFIELD T. DURBIN, *Governor of Indiana:*

DEAR SIR—I beg to submit herewith the report of the proceedings of the Indiana State Board of Agriculture for the year 1901.

Very respectfully,

CHARLES DOWNING,
Secretary.

MEMBERS

OF THE

Indiana State Board of Agriculture

1901.

1st District—JOHN C. HAINES, Rockport, Spencer County.
2d District—MASON J. NIBLACK, Vincennes, Knox County.
3d District—W. W. STEVENS, Salem, Washington County.
4th District—E. A. ROBISON, Franklin, Johnson County.
5th District—H. L. NOWLIN, Guilford, Dearborn County.
6th District—KNODE PORTER, Hagerstown, Wayne County.
7th District—E. J. ROBISON, Indianapolis, Marion County.
8th District—SID CONGER, Shelbyville, Shelby County.
9th District—W. T. BEAUCHAMP, Terre Haute, Vigo County.
10th District—JOHN L. DAVIS, Crawfordsville, Montgomery County.
11th District—M. S. CLAYPOOL, Muncie, Delaware County.
12th District—WM. M. BLACKSTOCK, Lafayette, Tippecanoe County.
13th District—JOHN L. THOMPSON, Gas City, Grant County.
14th District—COTT BARNETT, Logansport, Cass County.
15th District—AARON JONES, South Bend, St. Joseph County.
16th District—JAS. E. McDONALD, Ligonier, Noble County.

OFFICERS FOR 1901.

JAMES E. McDONALD, *President.*

JOHN L. THOMPSON, *Vice-President.*

E. H. PEED, *General Superintendent.*

CHARLES DOWNING, *Secretary.*

J. W. LAGRANGE, *Treasurer.*

Executive Committee.

MESSRS. NIBLACK, BEAUCHAMP, THOMPSON, CLAYPOOL.

A TABLE SHOWING THE OFFICERS, PLACE, AND PREMIUMS PAID OF EACH FAIR HELD BY THE STATE BOARD OF AGRICULTURE.

Year.	*President.*	*Secretary.*	*Treasurer.*	*General Superintendent.*	*Place of Fair.*	*Premiums Paid.*
1852	Gov. Joseph A. Wright	John B. Dillon	Royal Mayhew	W. T. Dennis	Indianapolis	
1853	Gov. Joseph A. Wright	John B. Dillon	Royal Mayhew	J. J. Bingham	Lafayette	
1854	Gov. Joseph A. Wright	Wm. T. Dennis	Royal Mayhew	W. T. Dennis	Madison	
1855	Gen. Joseph Orr	John B. Dillon	S. A. Buell	Calvin Fletcher, Jr	Indianapolis	$2,753 00
1856	Dr. A. C. Stevenson	Ignatius Brown	S. A. Buell	Calvin Fletcher, Jr	Indianapolis	4,225 00
1857	Dr. A. C. Stevenson	Ignatius Brown	S. A. Buell	Calvin Fletcher, Jr	Indianapolis	4,127 00
1858	Dr. A. C. Stevenson	John B. Dillon	Thomas H. Sharp	Calvin Fletcher, Jr	Indianapolis	
1859	George D. Wagner	John B. Dillon	Thomas H. Sharp	James L. Bradley	New Albany	6,163 00
1860	George D. Wagner	Wm. T. Dennis	Thomas H. Sharp	James L. Bradley	Indianapolis	3,827 00
1861	D. P. Holloway	Wm. T. Dennis	H. A. Fletcher		No Fair	
1862	James D. Williams	W. H. Loomis	H. A. Fletcher	J. A. Grosvenor	Indianapolis	3,994 00
1863	A. D. Hamrick	W. H. Loomis	H. A. Fletcher	J. A. Grosvenor	Indianapolis	
1864	Stearns Fisher	W. H. Loomis	Francis King	W. H. Loomis	Indianapolis	4,121 00
1865	Stearns Fisher	W. H. Loomis	Carlos Dickson	J. A. Grosvenor	Fort Wayne	4,078 00
1866	Stearns Fisher	W. H. Loomis	Carlos Dickson	J. A. Grosvenor	Indianapolis	
1867	A. D. Hamrick	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Terre Haute	6,331 00
1868	A. D. Hamrick	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Indianapolis	7,087 00
1869	A. D. Hamrick	A. J. Holmes	Carlos Dickson	J. B. Sullivan	Indianapolis	7,517 00
1870	J. D. Williams	Joseph Poole	Carlos Dickson	J. S. Benson	Indianapolis	7,914 00
1871	J. D. Williams	Joseph Poole	Carlos Dickson	Jacob Mutz	Indianapolis	8,564 00
1872	John Sutherland	Alex. Herron	Carlos Dickson	H. W. Caldwell	Indianapolis	9,619 20
1873	John Sutherland	Alex. Herron	Carlos Dickson	H. W. Caldwell	Indianapolis	8,864 75
1874	John Sutherland	Alex. Herron	Carlos Dickson	E. J. Howland	Indianapolis	10,754 00
1875	William Crim	Alex. Herron	Carlos Dickson	E. J. Howland	Indianapolis	12,068 20
1876	Hezekiah Caldwell	Alex. Herron	Carlos Dickson	J. L. Hanna	Indianapolis	8,179 30
1877	Jacob Mutz	Alex. Herron	Carlos Dickson	J. W. Furnas	Indianapolis	6,337 95
1878	W. B. Seward	Alex. Herron	Carlos Dickson	R. M. Lockhart	Indianapolis	5,057 00
1879	Robert Mitchell	Alex. Herron	Carlos Dickson	R. M. Lockhart	Indianapolis	5,472 00
1880	W. H. Ragan	Alex. Herron	J. A. Wildman	Fielding Beeler	Indianapolis	6,553 00
1881	R. M. Lockhart	Alex. Herron	J. A. Wildman	Fielding Beeler	Indianapolis	6,855 50
1882*	H. C. Meredith L. B. Custer	Alex. Herron	J. A. Wildman	Fielding Beeler	Indianapolis	8,096 00

1883	Robert Mitchell	Alex. Herron	J. A. Wildman	Fielding Beeler	Indianapolis	$9,581 13
1884	Robert Mitchell	Alex. Herron	S. Johnson	Fielding Beeler	Indianapolis	10,414 30
1885	R. M. Lockhart	Alex. Herron	S. Johnson	Fielding Beeler	Indianapolis	9,000 50
1886	W. B. Seward	Alex. Herron	S. Johnson	H. B. Stout	Indianapolis	9,419 00
1887	W. B. Seward	Alex. Herron	S. Johnson	C. E. Merrifield	Indianapolis	9,726 50
1888	J. N. Davidson	Alex. Herron	S. Johnson	R. M. Lockhart	Indianapolis	9,917 50
1889	J. N. Davidson	Alex. Herron	S. Johnson	C. E. Merrifield	Indianapolis	10,200 00
1890	W. A. Banks	Alex. Herron	S. Johnson	C. E. Merrifield	Indianapolis	13,040 50
1891	W. A. Banks	Leon T. Bagley	S. Johnson	C. E. Merrifield	Indianapolis	15,297 00
1892	J. M. Boggs	Leon T. Bagley	S. Johnson	E. H. Peed	Indianapolis	19,876 00
1893	V. K. Officer	Chas. F. Kennedy	J. A. Wildman	E. H. Peed	Indianapolis	18,407 50
1894	J. M. Sankey	Chas. F. Kennedy	E. J. Robison	E. H. Peed	Indianapolis	18,516 70
1895	J. M. Sankey	Chas. F. Kennedy	E. J. Robison	E. H. Peed	Indianapolis	17,561 98
1896	W. W. Hamilton	Chas. F. Kennedy	E. J. Robison	E. H. Peed	Indianapolis	14,817 17
1897	C. B. Harris	Chas. F. Kennedy	E. J. Robison	E. H. Peed	Indianapolis	19,296 88
1898	Charles Downing	Chas. F. Kennedy	E. J. Robison	John L. Thompson	Indianapolis	11,113 32
1899	W. W. Stevens	Chas. F. Kennedy	J. W. Lagrange	H. B. Howland	Indianapolis	17,107 11
1900	Aaron Jones	Charles Downing	J. W. Lagrange	H. B. Howland	Indianapolis	16,125 75
1901	J. E. McDonald	Charles Downing	J. W. Lagrange	E. H. Peed	Indianapolis	18,935 50
1902	M. S. Claypool	Charles Downing	J. W. Lagrange	E. H. Peed	Indianapolis	18,196 25

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*Henry C. Meredith died July 5, 1882, and the Vice-President, L. B. Custer, served the unexpired term.

LIST OF MEMBERS OF INDIANA STATE BOARD OF AGRICULTURE, SHOWING DATE AND TERM OF SERVICE.

NAME.	COUNTY.	FIRST ELECTED.	NO. YEARS SERVED.
Allen, Joseph	Montgomery	1853	2
Banks, W. A.	Laporte	1882	12
Barnes, John P.	Madison	1879	4
Barnett, Cott	Cass	1898	3
Basler, F	Sullivan	1872	2
Bennett, Wm. H.	Union	1854	7
Bennett, Wm. H.	Union	1863	2
Berry, W. W.	Knox	1889	3
Blackstock, Wm. M.	Tippecanoe	1895	2
Blanche, Willis	Howard	1887	2
Boggs, John M.	Tippecanoe	1885	8
Bonner, W. H.		1859	2
Bradley, James L	Johnson	1856	3
Branham, D. C.	Jefferson	1861	2
Brown, Dr. R. T.	Montgomery	1855	4
Brown, Geo. W.	Shelby	1857	2
Burke, L. A.	Posey	1870	5
Buskirk, Geo. A.	Monroe	1870	2
Beauchamp, Wm. T.	Vigo	1899	1
Bridges, John C.	Putnam	1901	..
Caldwell, Hezekiah	Wabash	1867	12
Carr, John F.	Jackson	1862	2
Claypool, A. B.	Fayette	1871	8
Claypool, M. S.	Delaware	1893	7
Clemens, B. F.	Wabash	1889	2
Cockrum, Jas. W.	Gibson	1853	2
Coffin, W. G.	Vermillion	1859	4
Cofield, J. W.	Ohio	1877	4
Collins, T. H.	Floyd	1858	4
Cotteral, W. W.	Henry	1883	2
Cox, E. T.	Posey	1864	6
Crawford, George	Laporte	1862	2
Crim, Wm.	Madison	1869	9
Custer, L. B.	Cass	1878	10
Conger, Sid	Shelby	1900	1
Davis, John L.	Montgomery	1895	5
Davidson, Stephen	Fulton	1870	8
Davidson, Jasper N.	Montgomery	1883	12
Dennis, W. T.	Wayne	1854	5
Donaldson, W. C.	Parke	1863	8
Dowling, Thomas	Vigo	1871	4
Downing, Charles	Hancock	1893	8
Drake, James P.	Marion	1854	2
Dume, George G.	Lawrence	1851	2
Duncan, Wm.	Lawrence	1858	4
Dungan, S. W.	Johnson	1882	12
Durham, Thos.	Vigo	1853	2

LIST OF MEMBERS, ETC.—Continued.

NAME.	COUNTY.	FIRST ELECTED.	NO. YEARS SERVED.
Emison, Samuel	Knox	1851	3
Fisher, Stearns	Wabash	1854	13
Fletcher, Calvin	Marion	1862	2
Franklin, W. M.	Owen	1855	3
Freeman, A.	Porter	1858	4
Gaar, J. M.	Wayne	1865	2
Gerard, J. B.	Dearborn	1873	2
Gilbert, Joseph	Vigo	1881	2
Graffe, Dr. G. B.	Gibson	1855	5
Graham, John M.	Delaware	1883	4
Greer, W. A.	Dearborn	1885	3
Grosvenor, J. A.	Marion	1864	2
Haines, John C.	Lake	1896	4
Hamrick, A. D.	Putnam	1859	14
Hamilton, W. W.	Decatur	1891	6
Hancock, R. H.	Harrison	1878	6
Hargrove, Samuel	Pike	1882	6
Harris, Chas. B.	Elkhart	1892	6
Harris, Jacob R.	Switzerland	1851	4
Hay, A. Y.	Clark	1854	2
Haymonds, Dr. Rufus	Franklin	1855	4
Haynes, R. P.	Daviess	1875	8
Helm, Dr. Y. C.	Delaware	1859	10
Herriot, Samuel	Johnson	1853	2
Herron, Alex	Fayette	1867	4
Holton, W. B.	Marion	1894	2
Holloway, David P.	Wayne	1851	4
Holloway, David P.	Wayne	1861	2
Holmes, D. J. C.	Delaware	1859	10
Howland, H. B.	Marion	1892	2
Howland, H. B.	Marion	1896	3
Huffstetter, David	Orange	1853	2
Hussey, George	Vigo	1851	1
Johnson, F. C.	Floyd	1872	6
Jones, Aaron	St. Joseph	1894	6
Jones, Dick	Bartholomew	1883	8
Jones, Lloyd	Huntington	1889	4
Kelley, John B.	Warrick	1851	2
Kirkpatrick, T. M.	Howard	1881	2
Lagrange, J. W.	Johnson	1894	4
Lane, George W.	Dearborn	1852	8
LaTourette, Henry	Fountain	1883	4
Levering, John	Tippecanoe	1852	2
Levering, Mortimer	Tippecanoe	1897	4

LIST OF MEMBERS, ETC.—Continued.

Name.	County.	First Elected.	No. Years Served.
Lockhart, R. M	Dekalb	1874	20
Loder, Isaac B	Rush	1861	4
Loomis, W. H	Allen	1861	4
Matson, J. A	Putnam	1854	1
Matthews, Claude	Vermillion	1897	2
Maze, W. A	Tipton	1891	4
Meredith, Henry C	Wayne	1879	4
Milhouse, J. V	Jennings	1875	2
Mitchell, Robert	Gibson	1875	21
Mitchell, Thos. V	Rush	1869	10
Morgan, Jesse	Rush	1852	2
Mutz, Jacob	Shelby	1868	14
McBride, Jeremiah	Martin	1851	3
McClung, J. A	Fulton	1888	4
McConnell, George N	Steuben	1860	2
McConnell, George N	Steuben	1864	6
McCoy, James S	Knox	1892	4
McCrea, John	Monroe	1864	6
McDonald, M. A	Warren	1893	2
McDonald, James E	Noble	1894	6
McMahan, John	Washington	1851	3
McWilliams, R. C	Parke	1881	2
Nelson, J. D. G	Allen	1853	6
Nelson, J. D. G	Allen	1870	4
Nelson, Thomas	Parke	1875	4
Nelson, Thomas	Parke	1889	2
Niblack, Mason J	Knox	1896	4
North, Benjamin	Ohio	1867	6
Nowlin, H. L	Dearborn	1897	4
Officer, V. K	Jefferson	1888	9
O'Neal, J. K	Tippecanoe	1881	2
Orr, Joseph	Laporte	1851	6
Peck, Henry	Cass	1862	2
Peed, E. H	Henry	1885	8
Piatt, Nathan	Warrick	1860	4
Porter, Knode	Wayne	1897	3
Poole, Joseph	Fountain	1861	12
Quick, S. R	Bartholomew	1879	4
Raab, D. G	Ohio	1856	5
Ragan, W. H	Putnam	1873	10
Ratliff, John	Grant	1883	4
Reese, D. E	Dearborn	1865	4
Reiter, Gerard	Knox	1888	1
Robison, E. A	Johnson	1898	3

LIST OF MEMBERS, ETC.—Continued.

NAME.	COUNTY.	FIRST ELECTED.	NO. YEARS SERVED.
Sample, H. P	Tippecanoe	1873	8
Sankey, James M	Vigo	1891	6
Shoemaker, John C	Perry	1862	10
Seig, J. Q. A	Harrison	1884	10
Seward, A	Monroe	1851	2
Seward, W. B	Monroe	1872	20
Seybold, Dempsey	Parke	1879	2
Simonton, Robert	Huntington	1887	2
Smith, Abraham	Knox	1853	2
Spalding, T. N	Lagrange	1852	2
Stevenson, Alex. C	Putnam	1851	3
Stevenson, Alex. C	Putnam	1855	4
Stevens, W. W	Washington	1894	6
Stewart, Charles B	Tippecanoe	1883	2
Sunman, T. W. W	Ripley	1881	4
Sutherland, John	Laporte	1864	18
Swinney, Thomas W	Allen	1851	1
Thompson, John L	Grant	1895	5
Thompson, S. H	Jefferson	1864	3
Turner, John N	Grant	1879	2
Tuttle, T. W	Delaware	1876	1
Vawter, S	Jennings	1855	3
Vinton, A. E	Marion	1858	2
Wagner, G. D	Warren	1854	7
Wiley, Lemuel	Switzerland	1863	1
Willard, Roland	Kosciusko	1851	2
Williams, James D	Knox	1855	18
Wright, Joseph A	Marion	1851	3

State Industrial Associations.

OFFICERS FOR 1901.

Indiana State Board of Agriculture—President, James E. McDonald, Ligonier; Secretary, Charles Downing, Indianapolis.

Indiana Horticultural Association—President, C. M. Hobbs, Bridgeport; Secretary, James Troop, Lafayette.

Indiana Shorthorn Breeders' Association—President, E. Folsom, Indianapolis; Secretary, W. J. Quick, Brooklyn.

Indiana Dairymen's Association—President, J. J. W. Billingsley, Indianapolis; Secretary, H. E. Van Norman, Lafayette.

Indiana Wool Growers' Association—President, Sid Conger, Flatrock; Secretary, J. W. Robe, Greencastle.

Indiana Swine Breeders' Association—President, J. B. Luyster, Franklin; Secretary, Allen Beeler, Liberty.

Indiana Poultry Breeders' Association—President, Frank Johnson, Howlands; Secretary, Jesse Tarkington, Indianapolis.

Indiana Farmers' Mutual Insurance Union—President, Aaron Jones, South Bend; Secretary, Joshua Strange, Marion.

Indiana Jersey Cattle Club—President, W. S. Budd, Indianapolis; Secretary, Harry Jenkins, Indianapolis.

Indiana Corn Growers' Association—President, A. O. Lockridge, Greencastle; Secretary and Treasurer, H. F. McMahan, Fairfield.

Farmers' Institutes—Director, Prof. W. C. Latta, Purdue University, Lafayette.

Experiment Station—Director, Prof. C. S. Plumb, Purdue University, Lafayette.

State Chemist—Prof. H. A. Huston, Purdue University, Lafayette.

State Entomologist—Prof. James Troop, Purdue University, Lafayette.

THE

Indiana State Board of Agriculture

CONSTITUTION.

As Revised and Adopted at the January Meeting of the Board, 1891.

Article 1. The name and style of this society shall be "The Indiana State Board of Agriculture," its objects, to promote and improve the condition of agriculture, horticulture, and the mechanic, manufacturing and household arts.

Art. 2. There shall be held in the city of Indianapolis, at such time as may be prescribed by law, an annual meeting of the State Board of Agriculture, together with presidents, or other delegates duly authorized, from each county, or such other agricultural society as may be authorized by law to send delegates, who shall, for the time being, be ex-officio members of the State Board of Agriculture, for the purpose of deliberation and consultation as to the wants, prospects and condition of the agricultural interests throughout the State; and at such annual meetings the several reports from county societies shall be delivered to the President of the State Board of Agriculture; and the said President and delegates shall, at this meeting, elect suitable persons to fill all vacancies in this Board: Provided, however, That said election shall not affect the members of the Board present, whose terms shall not be considered to expire until the last day of the session.

Art. 3. The State Board-elect shall meet immediately after the adjournment of the State Board, for the purpose of organization and for the transaction of such other business as the wants and interests of the society may require; and hold such other meetings from time to time, for making out premium lists, preparing for State Fairs, and all other business necessary to the promotion of the objects of the society.

Art. 4. The State Board-elect shall consist of sixteen members, chosen from the following districts:

1st District—Posey, Vanderburgh, Gibson, Warrick and Spencer counties.
2d District—Knox, Daviess, Martin, Pike, Dubois, Crawford and Perry counties.
3d District—Harrison, Washington, Orange, Floyd, Clark and Scott counties.
4th District—Jackson, Lawrence, Brown, Monroe, Greene, Owen, Johnson and Sullivan counties.
5th District—Jefferson, Switzerland, Ohio, Dearborn, Franklin, Ripley and Jennings counties.
6th District—Bartholomew, Decatur, Rush, Fayette, Union and Wayne counties.
7th District—Madison, Hancock, Hamilton, Henry and Shelby counties.
8th District—Marion County.
9th District—Clay, Vigo, Parke, Vermillion and Fountain counties.
10th District—Putnam, Morgan, Hendricks, Montgomery and Boone counties.
11th District—Delaware, Randolph, Jay, Adams, Wells, Huntington and Blackford counties.
12th District—Carroll, White, Benton, Newton, Tippecanoe, Warren, Jasper and Pulaski counties.
13th District—Clinton, Tipton, Howard, Grant, Wabash and Whitley counties.
14th District—Elkhart, Kosciusko, Fulton, Cass and Miami counties.
15th District—St. Joseph, Marshall, Starke, Laporte, Porter and Lake counties.
16th District—Allen, Dekalb, Steuben, Lagrange and Noble counties.

Chosen for two years, one-half of whose terms expire every year, to wit: Those representing the first, second, third, fourth, seventh, fourteenth, fifteenth and sixteenth districts expire at the annual meeting of 1860, and those representing the fifth, sixth, eighth, ninth, tenth, eleventh, twelfth and thirteenth districts expire at the annual meeting to be held in January, 1861. To be chosen by ballot.

Art. 5. It shall be the duty of the President to preside at all meetings, conduct the business in an orderly and parliamentary manner, and officially sign all vouchers and drafts upon the Treasurer (except for premiums), and all other instruments requiring the same, and call special meetings in cases of emergency.

Art. 6. The State Board-elect shall, at the annual meeting after the adjournment of the delegate meeting, proceed to elect one of their number President, who shall hold his office for a term of one year, and until his successor is elected and qualified; and one of their number for Vice-

President, whose term shall be the same as President, who shall act, and for the time being have all the power, as President, whenever the President is absent from any regular meeting. They shall also elect some suitable person as Secretary and some suitable person as Treasurer, and a General Superintendent, who shall hold their offices each for one year, unless removed for incompetency or neglect of duty. They shall also elect four of their number who shall, with the President, constitute an Executive Committee, who shall have power to act in cases of emergency, where loss would result by waiting till a regular meeting of the Board, but shall have no power whatever during a meeting of the Board.

Art. 7. It shall be the duty of the Treasurer to safely keep the funds belonging to the society, pay out the same on orders or drafts drawn by the Secretary, and report annually to the State Board, and as much oftener as he may be called upon by the Board, and shall give bond for the faithful performance of his duties.

Art. 8. It shall be the duty of the General Superintendent to take care of and carefully keep all property belonging to the society, have the care and control of the Fair Grounds during the recess; have the supervision and oversight of such improvements or additions as may be directed by the State Board, and, under their direction, procure materials, contract for labor, and shall be, during the continuance of the Fair, the Chief Marshal and head of the police. The members of the Board shall employ all the necessary police and gatekeepers.

Art. 9. The Secretary shall keep a true record of the proceedings. He shall conduct all correspondence on behalf of the society, except when otherwise directed by the President. He shall, by himself and assistants by him appointed, arrange the details of the entries, tickets and enroll the names of committees and judges of the State Fair, receive and record the various reports of the awarding committees, fill out and deliver all diplomas and certificates. It shall be the duty of the Secretary to condense the County Agricultural reports for each year into one volume and superintend the publishing of the same. He shall audit and file all accounts against the Board; draw orders in favor of the proper persons on the Treasurer for the amount; but orders shall not be drawn payable to order or bearer, but to the name of the party alone or his agent. He shall make an annual report, showing amount of all orders upon the treasury, and shall perform such other duties as the best interests of the society may demand; but he is at all times subject to the direction and control of the State Board.

Art. 10. At the annual meeting of the Board the salaries of the Treasurer, Secretary and Superintendent shall be fixed for the ensuing year; Provided, That said Board may, in their discretion, at any meeting of said Board, make said officers an additional allowance for extra services, Art. 11. That no compensation shall be allowed to delegates attending the annual meetings of the State Board; nor shall the members of the State Board-elect be paid any sum of money, as compensation or otherwise, except by order of the Board-elect.

Art. 12. The State Board may adjourn from time to time, or they may be called together by the Secretary, by order of the President, by a written notice to each member, enclosed by mail, and a notice of such meeting published in two or more newspapers of general circulation, in the city of Indianapolis; and all meetings so held by adjournment, or calls, shall be deemed regular and legal.

Art. 13. Any alteration or amendment to this Constitution may be made at the annual meeting of the State Board, two-thirds of all the members voting for such amendment.

Art. 14. The following standing committees shall be appointed by the President, to whom all matters of business coming up for reference under their particular heads shall be referred, unless otherwise specially directed by the Board:

1. Finance and Claims.
2. Rules and Regulations.
3. Fair Grounds.
4. Unfinished Business.
5. Geological Survey—Executive Committee, ex-officio.
6. Premium List.

AMENDMENTS TO THE CONSTITUTION.

At the May meeting in 1851, certain rules, embracing ten sections, for the government of county agricultural societies, were adopted by the Board of Agriculture, as required in Section 1 of the statute laws enacted by the Legislature of Indiana for the "Encouragement of Agriculture," approved February 17, 1852.

At the February meeting of 1868 the rules were found inexpedient and were repealed, and the following resolutions, submitted by the Committee on Rules and Regulations, were adopted:

Resolved, That all county and district societies shall be organized and governed by the laws of the State of Indiana in regard to agricultural societies, and especially under the act passed by the Legislature and approved February 17, 1852.

Resolved, That all societies so organized will be entitled to send delegates to this Board (State Board of Agriculture) at its annual meetings, and will be received and acknowledged upon the presentation of their reports and credentials, and compliance with the laws as legally organized societies.

THE

Indiana State Board of Agriculture

A RESUME OF WORK FOR 1901.

Indianapolis, Ind.,
Wednesday Evening, January 9, 1901.

The Indiana State Board of Agriculture met at the office of the Secretary on the call of President Jones.

The following members were present: Messrs. Jones, Thompson, Stevens, Conger, Porter, Claypool, Nowlin, McDonald, Haines, E. A. Robison, W. T. Beauchamp, Barnett, Niblack and E. J. Robison. Those absent were Messrs. Davis and Levering.

On motion of Mr. Niblack the bill of Mrs. H. B. Howland was ordered adjusted by the Secretary, and if any balance be found due her to issue a warrant for the same in her favor.

On motion the Board adjourned sine die.

CHARLES DOWNING,
Secretary.

ORGANIZATION OF NEW BOARD.

Wednesday Evening, January 9, 1901.

After the adjournment of the meeting of the old Board the new Board met and was called to order by Mr. Niblack.

There were present J. C. Haines, Mason J. Niblack, W. W. Stevens, E. A. Robison, H. L. Nowlin, Knode Porter, E. J. Robison, Sid Conger, W. T. Beauchamp, J. C. Bridges, M. S. Claypool, W. M. Blackstock, Cott Barnett, Aaron Jones and J. E. McDonald.

On motion of Mr. Niblack, Mr. Jones was elected temporary Chairman.

Mr. Jones took the chair and announced that the meeting was ready for business.

On motion, duly seconded, the Board proceeded to the election of officers for the ensuing year, except the offices of General Superintendent and Janitor.

The President appointed Messrs. Niblack and E. J. Robison tellers to collect and canvass the vote.

A vote was taken for President of the Board without nominations, which resulted as follows:

Mr. James E. McDonald received nine votes, Mr. E. Robison received one vote, and Mr. Jones received six votes.

The Chairman declared Mr. McDonald duly elected President of the Board for the ensuing year, he having received a majority of all the votes cast.

A vote was then had for Vice-President without nominations, which resulted as follows:

Mr. E. J. Robison received two votes, Mr. E. A. Robison received four votes, Mr. John L. Thompson received nine votes and Mr. J. C. Haines received one vote; and Mr. Thompson having received a majority of all the votes cast was declared duly elected Vice-President.

On motion of Mr. W. W. Stevens, Mr. Niblack was instructed to cast sixteen votes for Charles Downing for Secretary of the Board for the ensuing year, which was accordingly done. The President declared Mr. Downing duly elected Secretary of the Board for the ensuing year.

On motion of Mr. E. J. Robison, the Secretary was instructed to cast sixteen votes for Mr. J. W. Lagrange for Treasurer of the Board for the ensuing year, he being the only candidate for that office, which was accordingly done, and the Chairman thereupon declared Mr. Lagrange duly elected Treasurer of the Board for the ensuing year.

On motion of Mr. McDonald, the Board then proceeded to vote for a person to be recommended to the Governor as a member of the Live Stock Sanitary Commission, which resulted as follows:

Vic. K. Officer, of Volga, received nine votes and W. T. Beauchamp, of Terre Haute, received seven votes. Upon the announcement of the result of the vote, the Chairman, Mr. Jones, stated that if it was determined by the proper authorities that Mr. Officer is not eligible to the office, then the recommendation is to be for Mr. Beauchamp, which statement was concurred in by the whole Board.

On motion of Mr. Beauchamp, the following committee was appointed by Mr. J. E. McDonald, President of the Board, who assumed the chair, to be known as the Legislative Committee, viz.: E. J. Robison, Aaron Jones, Sid Conger and Mason J. Niblack.

On motion, the proposition of Dr. Light to lease the fair grounds was laid over until the next meeting of the Board.

On motion of Mr. Thompson, seconded by Mr. Haines, it was ordered by the Board that the fair for 1901 be held September 16, 17, 18, 19, 20 and 21, 1901, and the Secretary was instructed to publish the dates in the usual manner, provided that the Independent Order of Odd Fellows agree to make their special parade day not later than Tuesday of said week.

On motion of Mr. Niblack, duly seconded, the Board authorized the President to appoint the members of the Executive Committee for the ensuing year, and also the Superintendents for the different departments of the Fair.

Mr. Jones offered, and the Secretary read, the following resolutions, which motion was duly seconded by Mr. Stevens, and a vote being taken upon the motion to adopt, was unanimously adopted:

Whereas, The balance now on hands in the treasury is insufficient to pay all existing claims against the Board and the necessary expenses of the Board up to and including April 1, 1901, and

Whereas, It is absolutely necessary to borrow money to meet these liabilities; therefore, be it

Resolved, That the President and Secretary of the Indiana State Board of Agriculture be and they are hereby authorized and empowered to negotiate a loan for a sum of money sufficient to cover such claims and expenses, on the best terms possible, and that they execute a note or certificate of indebtedness therefor in the name of and for the Indiana State Board of Agriculture, and said officers are hereby authorized to do whatever else that may be necessary and proper in the premises to consummate said loan for the purpose above mentioned.

January 9, 1901.

On motion the Board adjourned to meet on the call of the President.

AARON JONES,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE MEETING, JANUARY 24, 1901.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to the call of the President at the Secretary's office, Room 14, State House, on January 24, 1901.

The committee was called to order by Mr. J. E. McDonald, President, and the roll was called, resulting as follows:

Present: J. E. McDonald, John L. Thompson, W. T. Beauchamp and M. S. Claypool.

Absent: Mason J. Niblack.

The President stated that the object of the meeting was to consider a proposition made by a committee of Odd Fellows, which proposition was read by the Secretary and is as follows:

Odd Fellows agree:

First. Parade on Tuesday.

Second. Hold prize drills on Fair Grounds, hours 9:30 to 12:30, Wednesday, Thursday, and Friday and Saturday, if necessary.

Third. Pay $1,000 on or before award of prizes, to be applied on prizes.

Fourth. The following shall have free admission to the grounds:

1. Members of the Executive Committee.
2. Members and Officers of Sovereign Grand Lodge.
3. All Patriarchs Militant in complete uniform.
4. Grand Lodge, Grand Encampment and Rebekah Assembly Officers.

The above proposition was discussed at length by the members of the committee, and statements and suggestions were made by Mr. W. H. Leedy, Secretary Grand Lodge of Odd Fellows.

After which, on motion of Mr. Claypool, duly seconded, it was ordered by the Board that the Indiana State Fair be held on the 16th, 17th, 18th, 19th, 20th and 21st of September, 1901, and that the proposition of the committee of the Grand Lodge of I. O. O. F. of Indiana be accepted by the unanimous vote of the committee.

The request of the Indianapolis Brewing Company to remove its building on Pennsylvania street opposite the Denison Hotel, to the Fair Grounds, on motion of Mr. Thompson, duly seconded, was refused.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

BOARD MEETING MARCH 6 AND 7, 1901.

The Indiana State Board of Agriculture met pursuant to the call of the President, at the office of the Secretary, Room 14, State House, March 6, 1901.

The President, Mr. McDonald, called the meeting to order and the Secretary called the roll of members. There were present Messrs. McDonald, Nowlin, Conger, Stevens, Porter, Bridges, Beauchamp, Robison, Thompson, Claypool, Jones, E. J. Robison, Mason J. Niblack and Cott Barnett.

There was absent John C. Haines.

President McDonald made the announcement of department Superintendents for the coming fair:

Admissions	J. C. Haines.
Grand Stand	Knode Porter.
Speed Horses	M. S. Claypool.
Draft Horses	W. M. Blackstock.
Light Harness Horses	W. T. Beauchamp.
Beef Cattle	Aaron Jones.
Dairy Cattle	E. J. Robison.
Swine	E. A. Robison.
Sheep	John L. Thompson.
Poultry	Sid Conger.
Art	J. C. Bridges.
Horticulture	M. J. Niblack.
Agriculture	Cott Barnett.
Mechanical	W. W. Stevens.
Privileges	H. L. Nowlin.

On motion of Mr. Niblack, the Board heard Mrs. Wilcox on changes and suggestions in the Art Department of the fair.

Mr. Braddock, of Shelbyville, addressed the Board on the subject of making provision for amateur exhibitors in all classes given by the Board at the next annual fair.

On motion of Mr. E. A. Robison, Mr. Braddock was requested to suggest and prepare classes and prizes for a Juvenile Department for the fair.

Mr. C. L. Hare addressed the Board on the subject of care and management of the race track, as did also Dr. R. C. Light, C. L. Channing, Col. Thomas, M. L. Hare.

The following propositions were presented and read to the Board: (Here insert.)

On motion, the election of officers to be filled by the Board was made a special order for 10 o'clock a. m. tomorrow.

On motion, the Board took a recess until 2 o'clock p. m.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

Wednesday Afternoon, March 6, 1901.

The Board reconvened and was called to order at 2 o'clock p. m., by President McDonald. All members present except Mr. Haines.

On motion of Mr. Stevens, seconded by Mr. E. A. Robison, the land tended in corn last year by Mr. Ealy, the piece of ground lying immediately east of the janitor's house and the three-cornered tract of land across the road east of the Fair Grounds enclosure was rented to Mr. Thomas Ealy on the following terms: Ealy is to furnish all tools, labor, seed, etc., and farm the ground in a good husbandmanlike manner. Cut up all the corn, place same in shocks, all at least one week before the Fair, and the Board is to have one-half of the crop free of expense in the shock, and the Secretary was ordered to draw up and enter into a contract with said Ealy in accordance with the order of the Board.

On motion of Mr. Thompson, duly seconded, the Board voted to visit the Fair Grounds on tomorrow (Thursday, March 7th), at 1:30 p. m.

Dr. W. J. Quick, Mr. Miller and Mr. Oscar Hadley, a committee representing the Polled Durham Breeders of the State submitted to the Board, for its consideration, a classification with appropriate premiums for Polled Durham Cattle.

On motion of Mr. Niblack, the Board went into Executive Session for the purpose of considering the revision of the premium list and other matters.

On motion of Mr. Beauchamp $7,600 was assigned and set apart to the Speed Department for purses.

Motion by Mr. Niblack to amend Mr. Beauchamp's motion to refer the matter of the speed program to Mr. Claypool, Superintendent of the Speed Department, for arrangement.

Pending these motions Mr. Blackstock moved that the matter of the speed program be deferred until 9 o'clock tomorrow morning. Carried; and it was so ordered.

On motion of Mr. Niblack, seconded by Mr. Claypool, it was ordered that the sum of $250 be appropriated by the Board for premiums for Polled Durham Cattle, provided that the Polled Durham Association would appropriate and pay the sum of $250 as premiums in such class.

On motion of Mr. Niblack, the Secretary and Superintendents of the Cattle Departments were authorized to offer premiums in the different classes equal to the amounts offered in such classes by the different breeders' associations.

Mr. Niblack moved that the Tunis Sheep be given a separate class for that breed of sheep and that $64 be appropriated for the same.

Motion lost.

On motion of Mr. Stevens, duly seconded, it was ordered that the Essex, Suffolk and Small Yorkshire breeds of hogs be divided into separate classes, and that the sum of $75 be appropriated to each class.

A motion was made and seconded that only first money be paid in Classes 34 (Essex and Suffolk), 35 (Small Yorkshire), and 36, where there was no competition.

Which motion was lost.

Mr. Conger moved that the suggestions of Mr. Braddock on juvenile classes for the fair be referred to the Executive Committee for action.

Mr. Jones moved to lay Mr. Conger's motion on the table, which was carried.

On motion, the Secretary was authorize to return the thanks of the Board to Mr. Braddock for the interest he manifested in the success of the State Fair and for the interest taken in the Juvenile Department, which he suggested.

On motion of Mr. Niblack the Board adjourned until tomorrow morning at 9 o'clock.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

BOARD MEETING, MARCH 7, 1901.

The Indiana State Board of Agriculture met pursuant to the adjournment.

President McDonald called the Board to order. There were present, Messrs. McDonald, Niblack, Jones, Thompson, Porter, Barnett, Nowlin, Conger, E. A. Robison, E. J. Robison, Blackstock, Beauchamp, Stevens, Bridges, Claypool. Absent, John C. Haines.

On the motion of Mr. Stevens, the proposition of the Indiana Shorthorn Breeders' Association to furnish the sum of ———— provided the Board appropriated an equal sum for a special class for Shorthorns, competition confined to the members of the Indiana Shorthorn Breeders' Association, was accepted and the Secretary was instructed to request Mr. Levitt, Secretary of the Indiana Shorthorn Breeders' Association, to strike out the clause in said proposition limiting exhibitors to the members of the Indiana Shorthorn Breeders' Association.

On motion of Mr. Blackstock the Board proceeded to the election of the officers to be filled by the Board, the hour for special order having arrived.

On motion of Mr. Niblack, the President appointed the following Committee on Fees and Salaries for the officers for the ensuing year, viz: Messrs. Niblack, Claypool and Conger. The Board then proceeded to the election of officers.

A vote was had for General Superintendent, which resulted as follows: Mr. E. H. Peed, of New Castle, received nine votes, Mr. E. A. Robison, of Rocklane, received four votes.

Mr. E. H. Peed having received a majority of all the votes cast, the President declared him duly elected General Superintendent for the ensuing year.

A vote was had for Janitor, which resulted as follows: W. H. Stern received nine votes and Mr. Green received four votes.

Mr. Stern having received a majority of all the votes cast for Janitor, the President declared him duly elected for the ensuing year.

The Board then proceeded to vote for a person to be recommended to the Governor as a member of the Board of Trustees of Purdue University to succeed Mr. W. A. Banks, of Laporte, whose term of office expires July 31, 1901, which resulted as follows: Mr. W. A. Banks, of Laporte, received nine votes, Mr. Aaron Jones, of South Bend, received two votes, and Mason J. Niblack, of Vincennes, received one vote.

The President announced that Mr. W. A. Banks, having received a majority of all the votes cast was entitled to the recommendation as a member of the Board of Trustees of Purdue University for ——— years from the 31st day of July, 1901, and the Secretary of the Board is directed to certify said recommendation to the Governor.

On motion of Mr. Niblack, the matter of renting the Fair Grounds for training and racing purposes was postponed until after the Board visits and returns from the Fair Grounds.

Mr. Claypool, Superintendent of the Speed Department, reported the speed program for the coming fair, which was adopted by the Board on motion of Mr. Niblack, and ordered published in the premium list as adopted.

Mr. E. A. Robison moved that one-half of the amount given to the Cattle Classes 16 and 17 as published in last year's list be given to two new classes, viz.: Brown Swiss and Dutch Belted Cattle.

Mr. McDonald moved to amend said motion by adding $100 to the amount appropriated to the Holstein-Friesian and Dutch Belted Class, the Guernsey Class, Ayrshire Class, and that said amount be divided by four and the following classes be made, viz: Holstein-Friesian, Dutch Belted, Ayrshires and Guernseys, but that no sweepstakes be given in the Dutch Belted and Ayrshire Classes.

Which amendment prevailed.

On motion of Mr. McDonald, the sum of $100 was deducted from Creamery Products Class and the classification and arrangement of the same was referred to the Superintendent of that department and the Secretary.

On motion of Mr. Blackstock, the premiums on Cottage Cheese were fixed as follows: 1st, $3; 2d, $2; 3d, $1.

On motion of Mr. McDonald, the sum of $100 was appropriated and added to the Horticultural Department, and the matter of arranging the premium list in that department was referred to the Superintendent of said department and the Secretary.

On motion, it was ordered that the Flower Department rules and premiums be referred to the ideas of the State Florists' Association, the Superintendent of the Flower Department and the Secretary.

On motion of Mr. Blackstock, the Board ordered that third premiums be added in Class 37, Grains and Seeds, using no more money than is now given in said class.

On motion, the President and Secretary were authorized and directed to look after the claim of the Board heretofore made out and presented to the United States Government, growing out of damage to buildings by United States soldiers encamped on the Fair Grounds in 1898-1899, and that a charge for rent be added to said claim.

On motion, the Board took a recess until 1:30 p. m., to visit the Fair Grounds.

At 4:30 p. m., the Board returned from the Fair Grounds and reconvened.

Mr. Niblack moved that the matter of taking care of the race track be referred to the Executive Committee, which motion was seconded by Mr. Porter.

Motion was lost.

Mr. Conger moved that the proposition of Dr. R. C. Light to rent the grounds for five years for $750.00 per year cash in advance on conditions named in his proposition be accepted, which motion was duly seconded and after a full discussion a yea and nay vote was called for, which resulted as follows:

Ayes—Messrs. E. J. Robison and Conger.

Nays—Messrs. Jones, Thompson, Niblack, E. A. Robison, Claypool, Blackstock, Barnett, Stevens, Bridges, Porter, Beauchamp and McDonald.

The President declared the motion lost.

Mr. Stevens moved that the care and management of the race track for the ensuing year be referred to the Executive Committee, which motion was seconded by Mr. Thompson.

After a discussion of the question a yea and nay vote was demanded, which resulted as follows:

Yeas—Messrs. Stevens, Blackstock, Niblack and McDonald.

Nays — Messrs. Jones, Conger, Robison, Robison, Barnett, Thompson, Claypool, Beauchamp and Bridges.

The President declared the motion lost.

On motion of Mr. Stevens, duly seconded, it was ordered by the Board that the race track, stables and grounds be put in good condition and kept in good condition during the present season, and that persons occupying stalls for horses in training be charged $1.50 per head for stalls so occupied and used, and that no horses be allowed to occupy stalls on the grounds unless the rate fixed herein be paid.

On motion of Mr. Beauchamp, duly seconded, the Board authorized the renting of the Fair Grounds and race track to Dr. R. C. Light, of Indianapolis, for the week of July 1, 1901. Said Light to pay all expenses for taking care of the track during the week and turn the grounds over to the Board in as good condition as they are in when the meeting begins, and that the laws of the State be observed during said meeting, upon the payment to the Board of the sum of $600.

The Committee on Salaries reported as follows:

Members, $5 per day and 5 cents per mile for each mile traveled.

Secretary, $1,800 per annum, he to pay help needed to conduct the work of his office.

Treasurer, $550 per annum, he to pay ticket sellers and other help of his office.

Janitor, $1 per day, including Sunday, free use of gas for two fires and lights, free pasture for one cow, providing the cow shall not be turned loose, the right to raise chickens to not exceed 100, free garden spot to not exceed one-half acre.

General Superintendent, $5 per day and 5 cents per mile for each mile traveled.

Judges, $5 per day and actual mileage.

Respectfully submitted,
MASON J. NIBLACK,
M. S. CLAYPOOL,
SID CONGER,
Committee.

On motion, the land in the northeast corner of the grounds which was cultivated last year, and the three-cornered track on the outside of the enclosure and also the piece of ground lying east of the janitor's house which was cultivated last year by Mr. Howland, is rented and leased to Mr. Thomas Ealy on the same terms and conditions as the land in the northeast corner of the grounds was leased to him last year, and the Secretary is authorized to enter into a contract for the same.

On motion of Mr. Blackstock, duly seconded, all unfinished business before the Board was referred to the Executive Committee.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE, MARCH 7, 1901.

The President called a meeting of the Executive Committee immediately after the adjournment of the meeting of the Board.

There were present: Messrs. McDonald, Jones, Thompson, Beauchamp and Claypool.

On motion duly made and seconded, Mr. Claypool was authorized and instructed to purchase a pair of mules, one mare to match the one now owned by the Board, and suitable harness for the same, on the best terms possible. Said team of mules to be used in preparing the track for training and driving purposes.

EXECUTIVE COMMITTEE, APRIL 10, 1901.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to the call of the President at the office of the Secretary at 9 o'clock a. m.

There were present: Messrs. McDonald, Jones, Claypool, Beauchamp, Thompson and Niblack.

On motion of Mr. Thompson, seconded by Mr. Claypool, it was ordered that a suitable attraction be secured if possible, upon reasonable terms, for the entertainment of the people who visit the State Fair and who desire to stay in the city over night. Said attraction to be put on at the Fair Grounds in the evening, and to be made a musical and military attraction, provided that the Citizens' Street Railway Company will contribute to a guaranty fund, in case of a loss, at least one-fourth the expense of putting on said attraction.

On motion of Mr. Claypool, seconded by Mr. Thompson, it was ordered that all committees for special attraction and preliminary arrangements for the fair be appointed by the Chairman of the Executive Committee, the President of the Board.

Mr. Claypool presented to the Board a proposition by the Chicago Horse Review Company to start the Review Stake Races over the race track of the Indiana State Fair, during the fair of 1901, and thereupon moved that the proposition be accepted, which motion was seconded by Mr. Jones, and was carried.

On motion, duly seconded, the matter of caring for the race track was referred to a committee to be appointed by the Chairman.

EXECUTIVE COMMITTEE, APRIL 10, 1901.

On motion the matter of the repair of the pump on the Fair Grounds was referred to the President and Secretary, with power to act.

On motion of Mr. Beauchamp, seconded by Mr. Niblack, the matter of printing, stationery, advertising, purchasing tickets, etc., was referred to a committee to be named by the President.

On motion of Mr. Niblack, duly seconded, the matter of fixing the rates to be charged for stalls in the stables on the Fair Grounds for training purposes, was referred to the committee on caring for the track, with instructions to said committee to charge the sum of $40 for a stable where it was used exclusively by one person.

On motion of Mr. Beauchamp, duly seconded, the Secretary was authorized and instructed to request the Citizens' Street Car Company for a loan of 150 settees during the fair.

On motion of Mr. Jones, duly seconded, the Secretary was instructed to rent the pasture land in the Fair Grounds enclosure to Mr. Frank P. Johnson for the sum of $100 for the season.

On motion of Mr. Jones, seconded by Mr. Claypool, the rates for the use of the Fair Grounds for picnic and other purposes were fixed as follows:

For the use of the grounds and track, $100 per day; for Retail Grocers' Association picnic, $75; for use of grounds without track and grand stand, $50 per day.

On motion of Mr. Claypool, seconded by Mr. Thompson, the claim of Mrs. Theresa H. Smith for the rental of 134 acres of land now leased by the Board, and other bills were allowed, and warrants for the same were authorized to be issued.

On motion of Mr. Niblack, seconded by Mr. Thompson, it was ordered by the Committee that Mr. Jones, of the committee, be authorized to secure a loan for an amount sufficient, upon reasonable terms, to enable the Board to purchase the 134 acres of land now leased by the Board and owned by Mrs. Theresa H. Smith.

The President named the following committees:

Committee on Race Track and Stables—Messrs. Claypool, Beauchamp and McDonald.

Committee on Advertising, Printing Stationery and Tickets—Messrs. McDonald, Thompson and Downing, Secretary.

Committee on Night Attraction and Street Car Matters—Messrs. McDonald, Niblack and Downing.

The committee opened the bids submitted for printing the premium list, which were as follows:

Wm. B. Burford	$237 90
Levey Bros. & Co	297 00
Indiana Newspaper Union	286 50
Sentinel Printing Company	350 00
Mitchell Printing Company	239 00

On motion of Mr. Niblack, the bid of Wm. B. Burford was accepted, and he was awarded the contract for printing the premium list for the coming fair.

On motion of Mr. Claypool, seconded by Mr. Thompson, it was ordered that the race track be put in first-class condition at once. The committee then adjourned.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE, JULY 5, 1901.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to the call of the President, at the Secretary's office at 10:30 a. m.

There were present: Messrs. McDonald, Jones, Niblack, Thompson, Claypool and Beauchamp.

Mr. McDonald, Chairman of the Committee on Night Attraction, reported that he had contracted for Sousa and his band for four concerts Wednesday and Thursday afternoon and evening for $3,500, which contract, upon motion, was ratified and adopted by the committee.

On motion of Mr. Jones, duly seconded, the action of the President in contracting with the Patriarchs Militant, whereby the Board is to appropriate $1,000 to the Patriarchs Militant Committee for prize drills, erect tents and allow cantons in full uniform company privileges on the Fair Grounds, etc., during the week of the fair, was ratified, adopted and approved.

On motion of Mr. Jones, duly seconded, the Secretary was authorized to place advertising matter with the same newspapers used last year upon the same terms as last year.

On motion of Mr. Thompson, duly seconded, the Chairman of the Night Attraction Committee was instructed to rent Tomlinson Hall for the Sousa concerts in the event of rain during the week of the fair.

The application of the Page Woven Wire Fence Company for a location for an exhibit building on the Fair Grounds was read, and on motion, was referred to Mr. Stevens, Superintendent of the Mechanical Department, with power to act.

On motion, the matter of the disposition of the ground between the Administration Building and the grand stand was referred to the President and Messrs. Stevens and Nowlin, with power to act.

Mr. Thompson moved that the Indianapolis Military Band be employed for four days of the fair for the sum of $315.

On motion of Mr. Thompson, seconded by Mr. Claypool, it was determined to give the March of Nations as a night attraction in connection with Sousa's concerts, at a cost not exceeding the sum of $1,000.

On motion of Mr. Beauchamp, the President appointed Mr. Beauchamp and the Secretary to arrange the details for the March of Nations.

On motion of Mr. Niblack, duly seconded, Mr. Claypool was appointed to take charge of the crops put in on the Fair Grounds.

On motion of Mr. Beauchamp, the matter of making contracts with bill posters was referred to the President and Secretary, with power to act.

On motion of Mr. Niblack, it was ordered that the entrances to the grand stand be used during the fair, instead of the exits.

The following resolution was introduced by Mr. Niblack, and seconded by Mr. Claypool, and was adopted.

Indianapolis, Ind., July 5, 1901.

Whereas, The funds of the Indiana State Board of Agriculture available for the purpose of paying current expenses of the Board and making repairs preparatory for the fair of 1901 are exhausted, therefore, be it

Resolved, That the President and Secretary be and they are hereby authorized to negotiate a loan on the best terms possible to be used by said Board for paying current expenses and for material and repairs preparatory for said fair, and said officers are authorized to sign a note or certificate of indebtedness for the purpose of effecting a loan.

MASON J. NIBLACK.

On motion the Board adjourned to meet on the call of the President.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

BOARD MEETING, SEPTEMBER 14, 1901.

The Indiana State Board of Agriculture met in the Administration Building at the Fair Grounds.

There were present: Messrs. McDonald, Beauchamp, Haines, Stevens, Blackstock, Thompson, Claypool, Barnett, Porter, Niblack, E. J. Robison, E. A. Robison, Nowlin and Bridges.

A committee representing the exhibitors in the Mechanical Department having displays of machinery on the Fair Grounds, appeared before the Board and requested concessions in the way of additional helpers' tickets.

After much discussion by members of the committee and members of the Board, Mr. Jones moved that the rule on the subject of helpers tickets as published in the premium list be enforced by the Superintendent of the Mechanical Department, provided that the exhibitors in said department would assist the Superintendent in carrying out and enforcing the rule.

Which motion was carried.

On motion of Mr. Claypool, seconded by Mr. Jones, it was ordered that the Treasurer put on sale special admission tickets at 50 cents each for the benefit of manufacturers and merchants and that unused tickets be redeemed by him until Friday afternoon at 4 o'clock of the week of the fair.

On motion, the matter of the renewal of the natural gas contract running with the Fair Grounds, was referred to the President, Vice-President and Secretary.

On motion, the Board adjourned.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

BOARD MEETING, SEPTEMBER 16, 1901.

The Indiana State Board of Agriculture met pursuant to the call of President McDonald in the Directors' room in the Administration Building on the Fair Grounds.

All members present.

The President announced the program of the Odd Fellows, who were encamped on the Fair Grounds under an arrangement with the Executive Committee of the Grand Lodge I. O. O. F. of Indiana.

On motion, it was ordered that the Board open the gates to the general public on Thursday, the day of the funeral of President McKinley.

On motion, it was ordered that a committee of three be appointed to call upon the Governor, Mayor of Indianapolis and the newspapers of Indianapolis and inform them as to the reasons why the fair can not be closed on Thursday, and to select two speakers to pronounce eulogies on President McKinley at the grand stand on that day, and that one hour be set apart and devoted to memorial services in honor of the dead President. The President announced the following committee to carry out the motion: E. J. Robison, Aaron Jones and Mason Niblack.

On motion it was ordered that the contract as made with the Odd Fellows Committee be enforced and strictly adhered to.

On motion, the President's action in refusing to issue fifty complimentary tickets to the members of the City Council of Indianapolis was unanimously concurred in.

On motion, the Board adjourned to meet on the call of the President.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

BOARD MEETING, FAIR GROUNDS, SEPTEMBER 17, 1901.

The Indiana State Board of Agriculture met at the Administration Building at the Fair Grounds.

There were present all the officers and members of the Board. The day's program of the fair was carried out as advertised.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

BOARD MEETING, FAIR GROUNDS, SEPTEMBER 18, 1901

The Indiana State Board of Agriculture met at the Administration Building on the Fair Grounds and proceeded to carry out the program for the fair as advertised.

All members and officers were present.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

BOARD MEETING, FAIR GROUNDS, SEPTEMBER 19, 1901.

The Indiana State Board of Agriculture met at the Administration Building on the Fair Grounds.

All the officers and members of the Board were present.

The program for today was carried out as published.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

BOARD MEETING, FAIR GROUNDS, SEPTEMBER 20, 1901.

The Indiana State Board of Agriculture met in the Directors' room of the Administration Building on the Fair Grounds.

There were present all the officers and members of the Board.

The committee heretofore appointed to arrange a program and invite speakers for the McKinley memorial reported the following program, which was carried out on yesterday:

> The Indiana State Board of Agriculture has appointed the undersigned committee to arrange suitable services on the death of our lamented President, William McKinley.
>
> The committee unanimously agreed on the following program:
>
> On Thursday, September 19th, at 1:30 p. m., appropriate memorial services will be held on the State Fair Grounds. Suitable music will be furnished by Sousa's Band.
>
> Orations on the life and death of the Nation's chieftain will be delivered by the Hon. John L. Griffiths and Frank B. Burke. The memorial services will be in addition to the regular program of the day, which will be carried out.
>
> E. J. ROBISON,
> AARON JONES,
> MASON NIBLACK,
> Committee.

On motion the report of the committee was concurred in and the committee discharged.

On motion of Mr. Thompson, duly seconded, the matter of the purchase of the 134 acres of land owned by Mrs. Theresa H. Smith and now occupied by the Board under a lease, be made a special order for tomorrow morning.

The Board then adjourned.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

BOARD MEETING, FAIR GROUNDS, SEPTEMBER 21, 1901.

The Indiana State Board of Agriculture met in the Directors' room in the Administration Building on the Fair Grounds.

All the officers and members of the Board were present.

On motion of Mr. Niblack, the President was made chairman of a committee to prosecute the claim for damages to the Fair Grounds and buildings thereon by reason of the occupation of the same by the soldiers of the Spanish War, and the President was authorized to name another member of said committee.

On motion of Mr. Niblack, seconded by Mr. Jones, the Executive Committee of the Board was authorized and instructed to proceed at once to purchase the 134 acres of land now owned by Mrs. Theresa H. Smith, and occupied by the Board under a lease executed by Jay G. Voss, the former owner of said land, and said committee is authorized to do all things necessary to effect said purchase, execute notes, mortgages, borrow money, etc.

The day's program was carried out as advertised.

On motion of Mr. Stevens, all unfinished business was referred to the Executive Committee.

The following resolutions were introduced by Mr. Niblack, seconded by Mr. Jones, and upon being put to a vote by the President, were unanimously adopted by the Board, viz.:

Resolved, That the Indiana State Board of Agriculture does hereby declare its intention to avail itself of the option or contract with Theresa H. Smith to purchase and take title to the real estate now occupied by said Board under contract of leasing and sale entered into between the Indiana State Board of Agriculture and Jay G. Voss, on the 12th day of February, 1892, and which was extended January 6, 1899, until the 1st day of March, 1906, by said Theresa H. Smith, the present owner of said real estate. A description of said real estate is as follows:

Part of the southwest fractional quarter and part of the southeast quarter, all in section 18, township 16 north, range 4 east, in said county (Marion) and State (Indiana) described as follows: Beginning on the west line of said section at a point 1,320 feet north of the southwest corner thereof, and running east parallel to the south line of said section 2,680.25 feet; thence south parallel to the west line of said section 1,320 feet to the south line of said section; thence east with said south line to the center of Fall Creek; thence northwestwardly with the center of Fall Creek to the west line of the Peru Railroad right-of-way, now called the Lake Erie & Western Railroad; thence northwardly with the west line of said right-of-way to the north line of the south half of said section 18; thence west with the north line of the south half of said section to the northwest corner of the southwest fractional quarter of said section; thence south with said west line of said section 80 rods, more or less, to the place of beginning, except a strip forty feet wide on the west side of said section heretofore sold to the Louisville, New Albany & Chicago Railway Company, containing clear of said railroad strip 134 acres, more or less, situate in Marion County in the State of Indiana.

Resolved, further, That the Executive Committee of this Board, be and it is hereby instructed, authorized and empowered to effect the purchase of said real estate for the price and on the terms mentioned in said contract or option, and to take a deed therefor in the name of the Indiana State Board of Agriculture, and to execute contracts, notes, mortgages and all other papers necessary to carry into full force and effect the purposes and intent of these resolutions. And said committee is expressly authorized to borrow money to pay for said real estate, and to execute notes for the same and to execute a mortgage on all the real estate owned by said Board, including the real estate purchased by these resolutions, in the event it may become necessary to do so, in order to secure the payment of the money borrowed for the purpose of purchasing said real estate.

MASON J. NIBLACK.

On motion, the Board adjourned.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE MEETING, OCTOBER 2, 1901.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to the call of the President, at the office of the Secretary of the Board.

All members of the committee were present except Mr. Jones.

On motion the following bills were allowed:

Watkins & Rauschaupt	$3 75
New Castle U. R. K. of P.	4 00
Chicago Horseman	73 35

The bills of the Western Horseman and the Newspaper Union were referred to the Secretary for adjustment.

Upon motion of Mr. Jones, all bills relating to bill-posting were referred to the President and Secretary for adjustment in accordance with the contract entered into.

Upon motion, the bill of the Spring Steel Fence & Wire Co. was disallowed, with the recommendation that said bill be filed against the State of Indiana through the Quartermaster-General.

The bill of Frank L. West was referred to the Secretary and Janitor, with instructions to the Secretary to issue a warrant for the amount of the same if correct.

On motion the bill of L. A. Catt & Co. was referred to the President for investigation and settlement.

Upon motion, the bills of Balke & Krauss and Parkhurst Bros., were referred to Mr. E. H. Peed, General Superintendent, for adjustment.

On motion, the bill of Mrs. R. C. Herrick was disallowed.

On motion, the bill of the Hogan Transfer Company was referred to the President and Secretary for settlement.

On motion, the bill of W. H. Roll & Son was referred to the General Superintendent, with instructions to return the paper purchased of them and not used and get credit therefor on the bill.

On motion, the bill of H. M. Stout was referred to Mr. E. A. Robison.

The bill of the Indianapolis Tent and Awning Company was allowed, less $10, on account of inferior decorations in the Horticultural Building.

The bill of the American Steel and Wire Company was referred to the Quartermaster-General of the State of Indiana.

The bill of the Indianapolis Gas Company was referred to the President and Secretary for investigation and settlement.

It was moved by Mr. Jones, and seconded by Mr. Beauchamp, that the bill of Wm. B. Burford, as presented, be allowed, with the exception of the item of $970.38 for the publication of the special report on the "Hog," and that he be allowed on that item $730.38 instead of $970.38 as shown in the itemized bill.

Which motion was carried unanimously.

On motion by Mr. Jones, seconded by Mr. Beauchamp, it was ordered that the bills enumerated in the abstract furnished by the Secretary be allowed, and that the warrants be drawn on the Treasurer for the amount.

On motion of Mr. Jones, seconded by Mr. Beauchamp, Mr. Claypool, Superintendent of the Speed Department, was instructed to see that the report of suspensions be made at once and that the records of the office be so prepared that the Board may be able to enforce its claims.

On motion of Mr. Claypool, duly seconded, the Secretary was authorized to purchase a new typewriter for the Secretary's office.

On motion the committee adjourned.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE MEETING, OCTOBER 4, 1901.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to adjournment.

There were present all members of the committee except Mr. Jones.

The meeting was called to order by President McDonald.

On motion of Mr. Niblack, duly seconded, it was ordered that the committee proceed at once to the purchase for the Board of the 134 acres of real estate now occupied by the Board under a lease and option to buy, and that a special committee of three be appointed to carry out the details of said purchase in accordance with the resolution authorizing the Executive Committee to buy said real estate.

The President appointed the following committee in accordance with the action of the committee, viz.: McDonald, Claypool and Niblack.

On motion of Mr. Claypool, duly seconded, the Secretary and Superintendent of Speed were appointed a committee to employ a competent engineer to prepare plans and specifications for a half-mile track and athletic grounds in the infield of the mile track.

On motion of Mr. Niblack, seconded by Mr. Beauchamp, it was ordered that the claim of the Board for damage done to the buildings and grounds be prosecuted diligently, and that a fair charge be made against the Government as a rental for the occupancy of the grounds as a military camp in the year 1898. It was also ordered that the claim be not less than $15,000 for rental and damages.

On motion, J. W. Lagrange, Treasurer of the Board, was allowed the sum of $95 on account of extra work and expense incurred in selling reserved seat tickets for the grand stand and for ticket sellers at the night attraction.

On motion, the Secretary was authorized to make a contract with the Business Men's Driving Club for the use of the race track and stables for training and matinee races for the year 1902.

On motion of Mr. Niblack, seconded by Mr. Thompson, a vote of thanks of the Executive Committee was extended to President McDonald for the very satisfactory manner he personally conducted the committee to Springfield, Ill., to visit the Illinois State Fair.

On motion, a vote of thanks was extended to the officers of the Illinois State Fair for the kind and generous treatment of the members of the Executive Committee during their visit to the Illinois State Fair, and the Secretary was instructed to inform the officers of the Illinois State Fair of the action of this committee.

On motion, the renting of the cattle barns for storage purposes was referred to the Secretary.

On motion of Mr. Niblack, the adjustment of $550 agreed upon by the insurance company's adjuster was accepted by the Board, for the loss by fire of one of the cattle barns, and that proofs of loss be made out and signed by the Secretary.

On motion the committee adjourned.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE MEETING, DECEMBER 3, 1901.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to the call of the President.

There were present: Messrs. McDonald, Thompson, Niblack, Beauchamp, Claypool, General Superintendent, Treasurer and Secretary.

On motion of Mr. Niblack, the bill of the Indianapolis Gas Company was allowed and ordered paid.

On motion, the Secretary was ordered to arrange and have printed and published the program for the annual meeting to be held January 7 and 8, 1902.

On motion of Mr. Niblack, it was ordered that the annual meeting be held on the 7th and 8th of January, 1902, that the election of members be held on the afternoon of the 8th, and that the details of the program be referred to the President and Secretary.

On motion, the Secretary was directed to invite the Governor of Indiana and the Mayor of Indianapolis and Dr. A. W. Bitting to address the annual meeting.

On motion, Messrs. Niblack, Thompson and Claypool were appointed a committee to secure Hon. James Wilson, Secretary of Agriculture, to address the annual meeting.

Mr. Claypool introduced the following resolution, which was seconded by Mr. Thompson, and upon being put to a vote by the President was unanimously adopted, to wit:

> Resolved, That the sum of $13,400 of the funds of the Board be and the same is hereby appropriated to make the first payment for the purchase of the 134-acre tract of land now owned by Mrs. Theresa H. Smith, and under lease by the Board and used and occupied as part of the Fair Grounds of the Board; and the Secretary is authorized to draw a warrant for said sum at the direction of the Executive Committee or the Special Committee of the Executive Committee.
>
> M. S. CLAYPOOL.

Seconded by John L. Thompson.

On motion, the committee adjourned to meet on December 13, 1901, for the purpose of closing up the land sale.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

ANNUAL MEETING—1902.

January 7, 1902.

The fiftieth annual meeting of the Delegate Board of Agriculture met in the rooms of the Indiana State Board of Agriculture, in the State House, in the city of Indianapolis, Ind., on Tuesday, January 7, 1902, pursuant to the law governing said Board, with Hon. James E. McDonald, of Ligonier, President of said Board, in the chair.

The roll call showed districts represented as follows:

1st	District—John C. Haines	Rockport	Spencer County.
2d	District—Mason J. Niblack	Vincennes	Knox County.
3d	District—W. W. Stevens	Salem	Washington County.
4th	District—E. A. Robison	Franklin	Johnson County.
5th	District—H. L. Nowlin	Lawrenceburg	Dearborn County.
6th	District—Knode Porter	Hagerstown	Wayne County.
7th	District—E. J. Robison	Indianapolis	Marion County.
8th	District—Sid Conger	Shelbyville	Shelby County.
9th	District—W. T. Beauchamp	Terre Haute	Vigo County.
10th	District—John C. Bridges	Bainbridge	Putnam County.
11th	District—M. S. Claypool	Muncie	Delaware County.
12th	District—W. M. Blackstock	Lafayette	Tippecanoe County.
13th	District—John L. Thompson	Gas City	Grant County.
14th	District—Cott Barnett	Logansport	Cass County.
15th	District—Aaron Jones	South Bend	St. Joseph County.
16th	District—James E. McDonald	Ligonier	Noble County.

Upon the call of the County Agricultural and Horticultural Associations the following delegates answered present:

Name of Fair.	*Name of Delegate.*	*Postoffice Address.*
Angola	Frank McCartney	Angola.
Anderson	C. K. McCullough	Anderson.
Bainbridge	J. C. Bridges	Bainbridge.
Boswell	M. A. McDonald	West Lebanon.
Bridgeton		
Bedford	Geo. W. McDaniel	Bedford.
Boonville	C. Pelzer	Boonville.
Bourbon	Charles Downing	Indianapolis.

Name of Fair.	*Name of Delegate.*	*Postoffice Address.*
Bremen	Fred Wheeler	Crown Point.
Bloomington		
Brazil	W. T. Beauchamp	Terre Haute.
Columbus	Joe Overstreet	Franklin.
Cleona		
Corydon	Oscar L. Huston	Corydon.
Chrisney	J. C. Haines	Rockport.
Cayuga	M. A. McDonald	West Lebanon.
Covington	Wm. H. Miles	Covington.
Crawfordsville	J. J. Insley	Crawfordsville.
Crown Point	Fred Wheeler	Crown Point.
Converse	Kenton Garrison	Converse.
Danville		
Decatur	E. Lyons	Berne.
Evansville	Rob't Mitchell	Princeton.
Elwood		
East Enterprise	H. L. Nowlin	Lawrenceburg.
Fairmount	John L. Thompson	Gas City.
Frankfort	Jas. A. Hedgcock	Frankfort.
Frankfort Races		
Franklin	John Tilson	Franklin.
Ft. Wayne		
Flora		
Greenfield	Charles Downing	Greenfield.
Hagerstown	Knode Porter	Hagerstown.
Huntingburg	Henry Duffendach	Huntingburg.
Huntington	Rob't Simonton	Huntington.
Kokomo Races	H. H. Leach	Kokomo.
Kentland	W. A. Strohm	Kentland.
Kendallville	J. E McDonald	Ligonier.
Logansport Driving Club	Cott Barnett	Logansport.
Lawrenceburg	H. L. Nowlin	Lawrenceburg.
Lebanon	Riley Hauser	Lebanon.
Liberty	J. H. McMahan	Liberty.
Lafayette	Wm. M. Blackstock	Lafayette.
Laporte	L. S. Fitch	Laporte.
Marion Driving Association.		
Marengo		
Middletown	Knode Porter	Hagerstown.
Muncie		
Madison		
Marion		
North Vernon	A. A. Tripp	North Vernon
Newtown	T. E. Martin	Newton.
Nashville	Henry B. Miller	Nashville

Name of Fair.	*Name of Delegate.*	*Postoffice Address.*
New Castle		
New Albany	Ed. S. Tuell	Corydon.
New Carlisle	A. H. Compton	New Carlisle.
New Harmony		
Newport	Henry B. Miller	Nashville.
Osgood	R. A. Creigmile	Osgood.
Oakland City		
Porter		
Plainfield Horticultural Assn.	Oscar Hadley	Danville.
Poplar Grove		
Portland	E. Lyons	Portland.
Princeton	S. Hargrove	Princeton.
Rushville	Ed Crosby	Rushville.
Riley	W. T. Beauchamp	Terre Haute.
Richmond	Walter S. Ratliff	Richmond.
Rochester	A. Stinson	Rochester.
Ramelton	H. B. Miller	Nashville.
Rockport	J. C. Haines	Rockport.
Remington		
Salem	H. C. Hobbs	Salem.
Swayzee	John L. Thompson	Gas City.
Sheridan	Calvin Sturdevant	Sheridan.
Shelbyville	S. B. Morris	Shelbyville.
South Bend		
Tipton		
Terre Haute	W. T. Beauchamp	Terre Haute.
Vincennes	Dr. M. M. McDowell	Vincennes.
Valparaiso		
Winchester	A. C. Green	Winchester.
West Lebanon	M. A. McDonald	West Lebanon.
Noble Co. Hort. So	Lewis Shearer	Ligonier.
Cass. Co. Hort. So		
Marion Co. Hort. and Ag. So.	W. B. Flick	Lawrence.
Lagrange Co. Hort. and Ag. So.	J. C. Crossman	Lagrange.
Johnson Co. Hort. So.	H. M. Stout	Franklin.
Floyd Co. Hort. So	J. W. McKinstry	Corydon.

The President announced the following committees:

Auditing Committee—Messrs. Haines, Porter and Bridges.

On Credentials—M. A. McDonald, Fred E. Wheeler and M. S. Claypool.

The President appointed Messrs. Conger, McDonald and McMahan to escort Governor Durbin to the room.

After being introduced by the President, Governor Durbin addressed the meeting.

Mr. John L. Thompson, Vice-President of the Board, being in the chair during the President's annual address, upon the conclusion of said address appointed Messrs. Blackstock, Mitchell and McMahon a committee on said address, with instructions to report at the next session of the meeting.

The Secretary then presented and read his report which is as follows:

SECRETARY'S REPORT.

Indianapolis, Ind., January 7, 1902.

To the President and Members of the Indiana State Board of Agriculture:

Gentlemen—I beg to submit a report of the receipts and disbursements of the Indiana State Board of Agriculture for the year ending January 6, 1902, as follows:

Receipts.

Balance in treasury January 8, 1901	$86 10	
Appropriation from State	10,000 00	
Proceeds of loan	4,926 70	
Rents from track, stable and grounds	626 80	
Stall and pen rents	1,310 00	
Privileges	4,357 90	
Admissions	35,703 00	
Entry fees	4,040 00	
Exhibitors' tickets	480 00	
Insurance on barn burned	550 00	
Sales of oats and corn	260 00	
Fines collected	20 00	
Special premiums	912 50	
Total		$63,273 00

Disbursements.

Members' per diem	$4,374 67	
Salaries of officers	3,322 40	
Construction labor and repairs	2,290 50	
Furniture and tools	103 20	
Rental of 134 acres of land	2,412 00	
Insurance	2,069 59	
Loans repaid and interest	5,004 65	
Postage, telegraph and telephones	583 38	
Express and freight	180 89	
Printing, stationery and supplies	1,004 36	
Advertising	3,838 71	
Police	712 45	
Assistant Superintendents and Judges	2,212 75	
Fair supplies	899 97	
Special attractions, Sousa's band	3,500 00	
Special attractions, Odd Fellows' drills	1,000 00	
Gas and lighting buildings and grounds	368 40	
Track harrow	145 00	
Horses, harness and wagon	533 78	
Printing "Hog Report"	770 38	
Settees for grounds	177 50	
Music for fair	315 00	
Typewriter and cabinet	99 90	
Straw	265 64	
Feed	142 45	
Tents for Odd Fellows	121 66	
Miscellaneous	1,098 72	
Premiums	18,935 50	
Warrants issued in 1900 and paid in 1901	263 95	
Balance	6,525 60	
Total		$63,273 00

The following is a list of the warrants issued in 1900 and paid by the Treasurer in 1901:

No. 166.	John F. Wright	$50 00	
No. 5892.	American Express Co	75	
No. 4021.	Wabash Plaindealer	4 00	
No. 4023.	Lafayette Home Journal	5 00	
No. 4032.	W. C. Ball & Co	4 00	
No. 4090.	D. B. Morris	50	
No. 4123.	American Express Co	8 70	
No. 4159.	J. W. Lagrange	191 00	
	Total		$263 95

The following warrants issued in 1901 are outstanding at this date:

No. 4570.	Dana Democrat	$1 00	
No. 4630.	Martinsville Reporter	1 50	
No. 4631.	Martinsville Republican	1 50	
No. 4644.	Plainfield Hoosier Trail	1 50	
No. 4678.	Winchester Republican	1 00	
No. 259.	E. W. Bowen, premium	14 00	
	Total		$20 50

STATEMENT OF FAIR.

Receipts.

Admissions	$35,703 00	
Privileges	4,357 90	
Entry fees	4,140 00	
Stall and pen rents	1,310 00	
Special prizes	912 50	
Exhibitors' tickets	480 00	
Total		$46,903 40

Disbursements.

Premiums—	
Speed horses	$6,880 00
Show horses	1,624 00
Cattle	3,646 00
Sheep	1,451 00
Swine	1,454 00
Poultry	761 25
Fruits	481 50
Flowers	342 00
Bees and honey	66 00
Dairy products	155 00
Agriculture	705 50
Art	1,216 50
Table luxuries	152 75
Special attractions, Sousa's band	3,500 00
Special attractions, Odd Fellows' drills	1,000 00
Per diem and mileage, season	4,367 32
Salaries, season	2,717 90
Postage, telegraph and telephone	522 83
Printing, stationery and supplies	1,001 31
Advertising	3,458 06
Police	709 20

Judges and Assistant Superintendents	$2,191 75	
Fair supplies	899 97	
Music	315 00	
Freight and express	97 96	
Miscellaneous	2,221 52	
Profits of the Fair	4,965 08	
Total		$46,903 40

SUMMARY.

Total receipts for 1901	$63,273 00
Total warrants issued in 1901	56,483 45
	$6,789 55

It is fair to state that of the items comprising the expenditures, there is included therein claims and loans which should have been paid in 1900, amounting to $6,901.94.

Very respectfully submitted,
CHARLES DOWNING,
Secretary.

TREASURER'S REPORT.

To the President and Members of the Indiana State Board of Agriculture:

Gentlemen—I have the honor to submit the annual report of the Treasurer of the State Board of Agriculture for the year ending January 7, 1902:

Receipts.

Balance in treasury January, 1901	$86 10	
Appropriation from State	10,000 00	
Admissions	35,703 00	
Received from Secretary during the year	17,483 00	
Total		$63,273 00

Disbursements.

Warrants issued in 1900 paid in 1901	$263 95	
Warrants issued and paid in 1901	56,462 95	
Balance on hand	6,546 10	
Total		$63,273 00

I herewith file warrants paid by me.

Respectfully submitted,
J. W. LAGRANGE,
Treasurer Indiana State Board of Agriculture.

On motion, the above reports were referred to the Auditing Committee.

The Superintendents of the different departments filed their several reports.

Dr. A. W. Bitting, of Purdue University, addressed the meeting, and his address reads as follows:

OUR LIVE STOCK INTERESTS AND THEIR PROTECTION.

If the Delegate State Board of Agriculture could assemble in the amphitheater on the Fair Grounds to make a review of all the horses in the State hitched in pairs as one continuous team, and they should move along at the comfortable gait of a mile in five minutes, it would require one entire working week of nine hours each day with barely a half-hour out for refreshments. When the wheel horses would reach the reviewing party, the lead team would have passed through Terre Haute, to Vincennes and cut across the State to Lawrenceburg, thence to Greensburg, via New Castle to Fort Wayne, after which they would turn west to Plymouth and thence on the return home to Indianapolis. If when the last team of horses should reach the grand stand a rest should be taken until the next day and the mules started in the same manner, and after three hours had passed as a grand finale, it would require the massing of the animals twenty abreast around the entire track to get out of the way of the returning lead team.

If the dairy cows could be gotten into one barn and arranged in two rows, the barn would extend the entire length of the Lake Erie & Western track from Michigan City to Indianapolis and then reach beyond to Shelbyville. If the beef stock were collected into one large yard it would need to be nine times as large as the whole of the State Fair Grounds, or cover 1,833 acres. The hogs would require 2,366 acres more, and the sheep would have a lot one and one-fourth miles long and one mile wide, or a tract one mile wide and seven and one-half miles long.

These facts present to us a picture of very large live stock interests. The regrettable part of the picture is that while that immense procession of horses was passing, a number sufficient to make a solid procession nineteen and one-half miles long, a similar line of mules one and a half miles long were not able to keep up with the pace, and the number of cattle, hogs and sheep that could not be brought to the market would be sufficient to give more than a quarter of beef, two and one-half carcasses of hogs, and a third of a sheep for each inhabitant of the city of Indianapolis.

It would have been much easier to have presented the bare figures for these several facts, but if the presentation in this manner may give a better conception of the enormity of the business and that our losses on meat products alone are greater than would be necessary to supply the needs of the largest city in the State, then my object will be accomplished.

I shall not deal with the advantages that might come from better breeding, the losses because of the indefensibly poor business methods in managing dairy herds, the superiority of certain feeds or their preparation in a certain manner, as these are the topics for the various breeders' associations. I shall deal only with some of the problems concerning the losses sustained from disease. These losses are real losses because the product has been produced and the owner does not realize for his time or labor in producing it.

The problem is not a simple one, as it involves phases for which the public is not yet prepared. It involves certain police control of some of the contagious and infectious diseases, better veterinary service among practitioners, a better knowledge of preventive measures among the owners and a larger research after practical measures for control. You may be relieved to know that the panacea is not to introduce a course of veterinary science in the country or common schools, as is so often recommended for agriculture, nature study, and now for the latest fad—forestry. I would not even recommend a special course in veterinary science at the State Agricultural College at the present time, although the number that might desire to enter might be equal to that in the agricultural course.

To begin with, we must divide the losses due to disease into two classes, that which is preventable and that which is beyond our control. Animals will wear out, some will become the victims of accidents, others will contract disease due to the work, care, exposure and other necessary factors, and a large number become affected with infectious diseases; the means of the accumulation of such infection we either do not know or can not control. We do not know how to control influenza with all its complications, strangles in colts, or even to limit the apparently simple sore eyes or sore mouth of cattle to the herd in which it first appears. It may break out in the next herd two or three miles away, and no known means of communication exists. We do not even know all the factors in the dissemination of the swine plague and hog cholera, and some of those that we do know are not within our control. This is only a hint at the list that might be cited. Probably it might be better to qualify the statement by saying that we do not know practical means for control, as there is a difference between being long on theory and short on practical application of facts. The question remains, do we do as well as we know how, and do we make the best efforts to know how? The State exercises police control over glanders, and by the stamping-out process has reduced the number so much that only three cases were found between the months of May and the first of November. Recently we found it necessary to destroy twenty-six head in one camp, but this is an exceptional experience and probably will not be repeated again in many years. Public opinion is wholly favorable to the vigorous methods of stamping-out process.

The loss from this disease is insignificant as compared with that from some others. Appraised at full value, the loss will hardly aggregate more than from two to five thousand dollars annually. At the lowest estimate the losses from tuberculosis among cattle is ten times this amount, and is bound to increase annually. Would any of the live stock associations that meet this week approve of inspection of herds, and quarantining until ridded of affected animals? Some of the States require a certificate of freedom from this disease when our cattle go to them, but we do not exact one in return. There can be no doubt but that the extent to which the disease prevails and the dangers of spreading from animal to animal and from animal to man have been greatly exaggerated many times, but it is a malady of so much importance that we can not afford to let it gain more foot-hold through default of action. The State is prepared to render assistance in its detection wherever there is reason to believe it may be present in a herd.

During the same period that three cases of glanders occurred among horses we were requested to give attention to more than two hundred cases of contagious abortion in herds numbering about seven hundred cows. Here was a loss at least twenty times as great as that among the horses; but how many Hereford, Shorthorn, or Jersey cattle breeders would approve of a rigid quarantine of such breeding stock for one year? You can depend upon every man approving such action as long as it hits the other fellow's herd, but no longer. Who can say what course of procedure should be taken with this disease? May the disease be communicated by the male? Should the quarantine extend to all the cattle for the same period, the aborting and the nonaborting alike? And if a quarantine be the desired method of control, what should be the period? I predict that more trouble will be experienced from this disease than from many others, as we are dependent wholly upon the honor and honesty of the owner for its confinement to a given herd.

Among sheep we have a parasitic disease known as the twisted stomach worm, causing far more loss than that produced by scabes. This latter disease is considered of sufficient importance to be specifically mentioned in the acts of the Legislature, and vigorous measures are provided for stamping it out. Would sheepmen approve of the quarantining of a flock of sheep known to be badly infested with the stomach worm, or insist upon their treatment before being distributed to other flocks? The two diseases are not exactly parallel, but I believe that sheepmen will agree that a quarantine until a course of treatment might be followed would not be prejudicial to the industry.

Texas fever among cattle is often cited to spring terror in the minds of cattlemen. As a matter of fact we have little or nothing to fear from this disease. We have no open season, and if we had the disease could not spread from one place to another except by being carried directly by the affected cattle. It can not be borne by wind or water or any other element that is not under our control. The public sentiment, however, is such that any measure for stamping out, whether rational or not, would be tolerated and never questioned.

Hydrophobia or rabies is a much more serious affection, but who would be willing to indorse the extermination of the worthless curs that kill $80,000 worth of sheep annually, besides propagating this disease and, I might add, make their owners poorer? An interesting case promises to develop in an action to recover from the township the value of fourteen head of cattle (lost out of a herd of thirty-eight) the result of the bites of a rabid dog. If action will stand for sheep killed it ought to stand for rabies communicated.

I have cited these few cases to show that with a proper public sentiment a dangerous disease may be practically stamped out or the losses resulting be made so small that they scarcely figure to the fifth place in numerals. Without this sentiment a disease of far greater importance may be allowed to run riot. While we do not do all that we know how to do, it is possible that this conservatism keeps us from doing things which we do not know how to do well.

In my opinion the first essential necessary for the better control of these diseases and thus lessening the losses is to distribute accurate and not exaggerated information upon these things which we do know and can do. This will assist in securing a proper public appreciation of the desirability for doing something, and remove prejudice. The means is largely through the agricultural press and through the action of such bodies as this one.

The second is in the encouragement of a better class of veterinary practitioners throughout the State. The last General Assembly passed a veterinary practice law exceedingly liberal in requirements or qualifications, reasonable in intent but unfortunately, through faulty construction, almost inoperative. It is not strange, however, that the very people who would be most benefited by its provisions are the ones to give it the most severe censure. The time has passed when men who have so little knowledge of anatomy that they could not tell an incomplete skeleton of the horse from that of the cow, or who depend upon Mayhew's illustrated stock doctor or the advertisement of Kendall's spavin cure or international stock food for their therapy, should be permitted to criminally torture and ruin any one of our animals that represents a part of the $80,000,000 invested in them. I have letters in my possession from men, stating their qualifications for practice that base their great knowledge and worth to the community upon the fact that they had read works that were out of press fifty years ago and were obsolete to all except the antiquarian twenty-five years ago. The law has had some good effects, and may it be strengthened and not weakened.

Upon the part of the State the present police control should be maintained and enlarged as rapidly as we are sure of our ground. In the meantime we should be seeking facts upon which we may base rational action for whatever we undertake to control. The diseases of the lower animals have not been and are not being studied as fully as they should be. Some private practitioners and a few experiment stations have done excellent work, and that done by the Bureau of Animal Industry is of as high grade as done anywhere in the study of the diseases of the human subject, but they are not able to completely cover the field. The interest shown in such work is attested by the fact that while the great majority of government publications go begging to get a taker, the publications of the Bureau of Animal Industry have been repeated through several editions and now are the most difficult of all to obtain from the Agricultural Department. Even in our own State how great was the demand and how quickly did the special report become exhausted two years ago. Write to any of the experiment stations for a file of their bulletins and see how often certain numbers will be exhausted and you will find them more often to be upon animal diseases than any other subject. Right here at home we need to know more about the cornstalk disease, cerebro spinal meningitis, the prevention of the eye disease and sore mouth of cattle, where vaccination should be practiced for the prevention of blackleg, more of the therapy of influenza and strangles, more about poultry troubles, and more than all these how to practically prevent hog cholera and swine plague.

Under the present law investigations may be conducted upon any disease and the fund not exhausted, for necessary police control will be used for such purpose. It is to be hoped that the results from such efforts will be of more general benefit than that from the control work proper. Our immediate need is a place for, and a modernly equipped laboratory in which to do the work. Our Experiment Station has an equipment barely adequate for the simplest kinds of work, but not in keeping with the importance of this field of research.

This paper is merely a suggestion of the present status of the work of animal protection and a hint at something to think about of what should be done to reduce the $2,000,000 loss on preventable diseases.

The meeting was then adjourned to meet at 2 p. m.

On motion of Robert Mitchell, the delegate Board adjourned to meet tomorrow morning at 9:30.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

January 8, 1902.

The Delegate Board met pursuant to adjournment on January 8, 1902, with the same officers and members present.

President McDonald announced that the meeting would receive and hear the reports of the committees on President's Address, Credentials and Auditing.

The Committee on President's Address submitted its report, which was adopted. Said report reads as follows:

To the President and Members of the Indiana State Board of Agriculture:

Gentlemen—Your committee appointed to pass upon the President's address would report as follows:

We have carefully examined the address of President McDonald in detail.

We heartily commend the address as a whole, and especially the kind words relative to our Agricultural College at Lafayette, and the management of the Farmers' Institute.

We would also commend the action of the President and State Board in their successful negotiations for the recent purchase of 134 acres of Fair Ground property.

We wish to accord the highest praise to the State Board in its conduct of the most successful fair in the history of the State, as shown by the President's address.

Respectfully submitted,
W. M. BLACKSTOCK,
H. F. McMAHAN,
F. L. WHEELER,
Committee.

The Auditing Committee submitted its report, which was concurred in on motion of Mr. Haines. Said report read as follows:

REPORT OF AUDITING COMMITTEE.

To the President and Delegates State Board of Agriculture:

Gentlemen—Your committee appointed to audit the receipts and expenditures of the State Board of Agriculture of Indiana beg leave to report that we have carefully and thoroughly gone through the books of the Secretary and Treasurer, and looked up all the receipts and each item of expenditure for the year past, and we find that the report of these officers of the Board are absolutely correct.

Respectfully submitted,

JOHN C. HAINES,
KNODE PORTER,
J. C. BRIDGES,
Committee.

The Committee on Credentials reported as follows:

REPORT OF COMMITTEE ON CREDENTIALS.

To the President and Members of the Indiana State Board of Agriculture and the Delegates to the Indiana State Board of Agriculture:

Gentlemen—We, the undersigned Committee on Credentials, beg leave to submit the following list of delegates who are entitled to vote in this body:

Name of Fair.	*Name of Delegate.*	*Postoffice Address.*
Angola	Frank McCartney	Angola.
Anderson	C. K. McCullough	Anderson.
Bainbridge	J. C. Bridges	Bainbridge.
Boswell	M. A. McDonald	West Lebanon.
Bridgeton		
Bedford	Geo. Wm. McDaniel	Bedford.
Boonville	J. C. Haines	Rockport.
Bourbon	Charles Downing	Indianapolis.
Bremen	Fred Wheeler	Crown Point.
Bloomington (no report)		
Brazil	Wm. T. Beauchamp	Terre Haute.
Columbus	Joe Overstreet	
Cleona		
Corydon	Oscar L. Huston	Corydon.
Chrisney	J. C. Haines	Rockport.
Cayuga	M. A. McDonald	West Lebanon.
Covington	W. F. Hulet	Covington.
Crawfordsville	J. J. Insley	Crawfordsville.
Crown Point	Fred Wheeler	Crown Point.
Converse	Kenton Garrison	Converse.
Danville	James A. Dungan	
Decatur	E. Lyons	Berne.
Evansville	Robt. Mitchell	
Elwood		
East Enterprise	H. L. Nowlin	Lawrenceburg.
Fairmount	John L. Thompson	Gas City.

Name of Fair.	*Name of Delegate.*	*Postoffice Address.*
Frankfort	Jas. A. Hedgcock	Frankfort.
Frankfort Races	J. A. Hedgcock	Frankfort.
Franklin	John Tilson	Franklin.
Fort Wayne	Geo. V. Kell	
Flora		
Greenfield	Chas. Downing	
Hagerstown	Knode Porter	Hagerstown.
Huntingburg	Henry Dufendach	Huntingburg.
Huntington	Rob't Simonton	Huntington.
Kokomo Races	H. H. Leach	Kokomo.
Kentland	H. A. Strohm	Kentland.
Kendallville	J. E. McDonald	Ligonier.
Logansport Driving Club	Cott Barnett	Logansport.
Lawrenceburg	H. L. Nowlin	Lawrenceburg.
Lebanon	Riley Hauser	Lebanon.
Liberty	J. N. McMahan	Liberty.
Lafayette	Wm. M. Blackstock	Lafayette.
Laporte	L. S. Fitch	Laporte.
Marion Driving Association.		
Marengo		
Middletown	Knode Porter	Hagerstown.
Muncie	C. H. Anthony	Muncie.
Madison	H. L. Nowlin	
Marion	V. W. Marshall	
North Vernon	A. A. Tripp	North Vernon.
Newton	T. E. Martin	Newton.
New Castle	Doctor Smith	
New Albany	Ed. S. Tuell	Corydon.
New Carlisle	A. H. Compton	New Carlisle.
New Harmony		
Newport	M. A. McDonald	West Lebanon.
Osgood	J. E. McDonald	Osgood.
Oakland City		
Porter		
Plainfield	O. Hadley	
Poplar Grove		
Portland	E. Lyons	Portland.
Princeton	S. Hargrove	Princeton.
Rushville	Ed. Crosby	Rushville.
Riley	W. T. Beauchamp	Terre Haute.
Richmond	Walter S. Ratliff	Richmond.
Rochester	A. Stinson	Rochester.
Ramelton	H. B. Miller	Nashville.
Rockport	J. C. Haines	Rockport.
Remington		

Name of Fair.	*Name of Delegate.*	*Postoffice Address.*
Salem	H. C. Hobbs	Salem.
Swazee	John L. Thompson	Gas City.
Sheridan	Calvin Sturdevant	Sheridan.
Shelbyville	S. B. Morris	Shelbyville.
South Bend		
Tipton		
Terre Haute	W. T. Beauchamp	Terre Haute.
Vincennes	Dr. M. M. McDowell	
Valparaiso		
Winchester	A. C. Green	Winchester.
West Lebanon	M. A. McDonald	West Lebanon.
Noble Co. Hort. Society	Lewis Shearer	Ligonier.
	J. C. Kimmel	Ligonier.
Cass Co. Hort. Society		
Marion Co. H. and A. So	W. B. Flick	Lawrence.
Lagrange Co. H. and A. So	J. C. Grossman	Lagrange.
Floyd Co. Trotting Ass'n		
Johnson Co. Hort. Society	H. M. Stout	Franklin.
St. Joseph Co. Hort. So		
Putnam Co. Poultry Ass'n		
Grange Jubilee		
Floyd Co. Hort. Society	J. W. McKintry	Corydon.

M. A. McDONALD,
FRED WHEELER,
M. S. CLAYPOOL,
Committee.

The next order on the program being the nomination of candidates for membership on the Board, the President declared the meeting opened for that purpose.

The following nominations were then made:

1st District—John C. Haines was nominated by Mr. Robert Mitchell, seconded by Calvin Sturdevant.

2d District—Mason J. Niblack was nominated by Mr. E. H. Peed, and seconded by George McDaniel.

3d District—Mr. E. S. Tuell was nominated by Mr. McKinstry and Mr. C. W. Brubeck was nominated by Mr. M. A. McDonald.

4th District—Mr. John Tilson was nominated by Mr. W. S. Young and Mr. E. A. Robison was nominated by Mr. J. C. Grossman.

7th District—Mr. David Wallace was nominated by Mr. M. A. McDonald and the nomination was seconded by Mr. A. J. Robison.

14th District—Mr. Cott Barnett was nominated by Mr. ———, and Joseph Cunningham was nominated by Mr. L. L. Moorman.

15th District—Mr. C. B. Benjamin was nominated by Mr. —————, Mr. R. F. Small was nominated by Mr. —————, and Mr. Robert Jones was nominated by Mr. Robert Mitchell.

16th District—Mr. J. E. McDonald was nominated by Mr. Sylvester Johnson and the nomination was seconded by Senator G. V. Kell.

There being no further nominations the President declared the nominations closed, and declared the meeting open for the election of members from the First, Second, Third, Fourth, Seventh, Fourteenth, Fifteenth and Sixteenth Districts, and appointed Messrs. W. W. Morgan, H. L. Nowlin, W. F. Hulet and Geo. W. McDaniels tellers to take up and count the vote.

There being but one candidate for membership for the First District, the Secretary on motion of Calvin Sturdevant cast seventy-one votes for Mr. John C. Haines, and he was declared duly elected to serve as a member of the State Board of Agriculture for two years.

On motion of Mr. Sturdevant the Secretary cast seventy-one votes for Mason J. Niblack for member of the Board for the Second District, and Mr. Niblack was declared duly elected.

A ballot was taken for members for the Third District which resulted as follows:

Mr. E. S. Tuell received thirty-eight votes and Mr. C. W. Brubeck received twenty-nine votes.

Mr. Tuell having received a majority of all the votes cast was declared by the President to be duly elected a member of the Board for the Third District.

A ballot was taken for member for the Fourth District which resulted as follows:

Mr. John Tilson, of Franklin, received forty-six votes and Mr. E. A. Robison, of Franklin, received twenty-one votes, and Mr. Tilson having received a majority of all the votes cast was declared duly elected.

On motion of Mr. Calvin Sturdevant, Mr. David Wallace, of Indianapolis, was declared duly elected member of the Board for the Seventh District, the Secretary having cast sixty-seven votes for his election.

At this point Mr. Wallace made a few remarks on his election.

A ballot was taken for member of the Board for the Fourteenth District, which resulted as follows: Mr. Joseph Cunningham, of Peru, received fifty-two votes and Mr. Cott Barnett, of Logansport, received thirteen votes, and the President declared Mr. Cunningham duly elected a member of the Board for the Fourteenth District.

A ballot was taken for member of the Board for the Fifteenth District, which resulted as follows: Mr. Aaron Jones received sixteen votes; Mr. R. F. Small received seven votes, and Mr. C. B. Benjamin received forty-three votes. Thereupon the President declared Mr. Benjamin duly elected a member of the Board for the Fifteenth District, he having received a majority of all the votes cast.

Mr. James E. McDonald being the only person nominated for member of the Board for the Sixteenth District, on motion of Mr. Calvin Sturdevant the Secretary cast sixty-seven votes for Mr.

McDonald, and he was declared duly elected a member of the Board for the Sixteenth District.

On motion the Board adjourned.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

January 8, 1902.

The Indiana State Board of Agriculture met upon the call of the President, James E. McDonald, after adjournment of the Delegate Board meeting.

The following members were present: Messrs. Haines, Niblack, E. A. Robison, Nowlin, Porter, E. J. Robison, Conger, Beauchamp, Bridges, Claypool, Blackstock, Thompson, Barnett, Jones and McDonald.

Absent: W. W. Stevens.

On motion, the claim of Wm. B. Burford for printing, etc., was referred to the Secretary for adjustment.

On motion, several of the bills were allowed and orders were authorized to be drawn for the same.

Remarks were made by several retiring members. After which, on motion of Mr. Jones, the thanks of the Board were voted to the President and Secretary for the manner in which the last fair was conducted.

There being no further business the Board adjourned upon motion of Mr. Jones.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

NEW BOARD MEETING.

January 8, 1902.

Upon the call of Mr. McDonald, the outgoing President, the new members together with the holdover members met for the purpose of reorganizing the Board for 1902.

The following members were present:

1st District—John C. Haines	Rockport.
2d District—Mason J. Niblack	Vincennes.
3d District—E. S. Tuell	Corydon.
4th District—John Tilson	Franklin.
5th District—H. L. Nowlin	Lawrenceburg.
6th District—Knode Porter	Hagerstown.
7th District—David Wallace	Indianapolis.
8th District—Sid Conger	Shelbyville.
9th District—W. T. Beauchamp	Terre Haute.
10th District—John C. Bridges	Bainbridge.
11th District—M. S. Claypool	Muncie.
12th District—Wm. M. Blackstock	Lafayette.
13th District—John L. Thompson	Gas City.
14th District—Joe Cunningham	Peru.
15th District—C. B. Benjamin	Leroy.
16th District—Jas. E. McDonald	Ligonier.

Mr. McDonald announced that the meeting was open for the election of a President and other officers for the ensuing year.

A vote was taken for President of the Board, which resulted as follows: Mr. Marc. S. Claypool, of Muncie, received fourteen votes and Mr. John C. Haines, of Rockport, received six votes. Mr. Claypool having received a majority of all the votes cast was declared duly elected President of the Board for the ensuing year. On motion of Mr. Haines, Mr. Claypool's election was made unanimous.

A vote was taken for Vice-President, which resulted as follows: Mr. John L. Thompson received eleven votes, Mr. John C. Haines received four votes, Mr. H. L. Nowlin received one vote, Mr. Mason J. Niblack received one vote.

Mr. Thompson having received a majority of all the votes cast for Vice-President was declared duly elected.

On motion of Mr. Niblack, seconded by Mr. Beauchamp, the Secretary cast sixteen votes for Mr. Jasper W. Lagrange for Treasurer of the Board for the ensuing year, and Mr. Lagrange was declared elected.

On motion of Mr. McDonald, duly seconded, the Secretary cast sixteen votes for Mr. E. H. Peed for General Superintendent for the ensuing year, and Mr. Peed was declared duly elected.

On motion of Mr. Niblack, the President was authorized to cast sixteen votes for Charles Downing for Secretary of the Board for the ensuing year, which was accordingly done, and Mr. Downing was declared duly elected Secretary of said Board for the ensuing year.

On motion of Mr. Niblack, the President was requested and authorized to select an Executive Committee of his own choosing.

On motion of Mr. Beauchamp, the committee heretofore appointed to look after the purchase of 134 acres of land now under lease by the Board, was continued.

On motion of Mr. McDonald, the President appointed Messrs. McDonald and Niblack a committee to prepare and present the claim of the Board against the United States Government growing out of damages committed by the United States troops while stationed at the Fair Grounds.

On motion of Mr. Thompson, the matter of constructing a boulevard was referred to the Executive Committee.

On motion of Mr. McDonald, the matter of improving the race track and building a half-mile track was referred to the Executive Committee.

On motion of Mr. McDonald, seconded by Mr. Thompson, the week of September 15th was fixed for holding the fair in 1902.

On motion of Mr. Niblack, duly seconded, it was ordered that all unfinished business be referred to the Executive Committee.

On motion, Mr. David Wallace was appointed a committee of one to interest the citizens of the city of Indianapolis in the Indiana State Fair for 1902.

Motion by Mr. Thompson that a Department of Music and Attractions be appointed.

Motion carried.

The President announced the following Executive Committee: John L. Thompson, James E. McDonald, Mason J. Niblack, Sid Conger and W. T. Beauchamp.

On motion of Mr. McDonald, the Board adjourned to meet on the call of the President.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

BOARD MEETING, JANUARY 31, 1902.

Pursuant to the call of the President, the Indiana State Board of Agriculture met in its rooms on January 31, 1902.

The roll call showed the following members present: Messrs. Haines, Niblack, Porter, Conger, Beauchamp, Bridges, Claypool, Blackstock, Thompson and Cunningham. All the members of said Board.

The opinion of Judge B. K. Elliott, on the question of the purchase of the 134 acres of land now held by the Board under a lease and option of purchase was read, and on motion the Committee on Land Purchase heretofore appointed was instructed to bring an action to determine the rights of the Board under said lease and option.

The President appointed Messrs. Porter, Haines and Thompson a Committee on Fees and Salaries.

The Board then proceeded to revise the premium list for the coming fair and having completed the same, the Secretary was authorized to publish it as revised and corrected.

On motion the matter of remodling the Agricultural Building was referred to the Executive Committee.

The Committee on Fees and Salaries submitted the following report, which was concurred in on motion, viz:

REPORT OF COMMITTEE ON SALARIES.

Members, $5 per day and 5 cents per mile for each mile traveled.

Secretary, $1,800 per annum.

Treasurer, $550, he to pay ticket sellers and other help and expenses of his office.

General Superintendent, $5 per day and 5 cents per mile for each mile traveled.

Judges, $5 per day and actual mileage.

We recommend that the sum of $300 be appropriated to cover office expenses, including stenographer and necessary clerk hire.

KNODE PORTER,
JOHN L. THOMPSON,
JOHN C. HAINES,
Committee.

On motion of Mr. Conger, the vote to appropriate the sum of $350 for a corn exhibit was reconsidered.

Mr. Conger moved to amend the original motion so as to appropriate $300 for the corn exhibit, which motion was amended by Mr. Thompson so as to appropriate $325, which motion prevailed and the original motion was amended so as to appropriate $325 for the corn exhibit.

On motion of Mr. Tilson, all unfinished business of the Board was referred to the Executive Committee with power to act.

On motion of Mr. Niblack, the Board adjourned to meet on the call of the President.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE MEETING, MARCH 6, 1902.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to the call of the President, on the 6th day of March, 1902, at the rooms of the Indiana State Board of Agriculture at the State House in the city of Indianapolis.

There were present upon the call of the roll: Messrs. Claypool, McDonald, Beauchamp, Thompson and Conger.

On motion of Mr. Beauchamp, duly seconded, Mr. McDonald was authorized to close a contract with Sousa's Band for four concerts, two on Wednesday, September 17, and two on Thursday, September 18, 1902, afternoons and evenings.

On motion of Mr. McDonald, the matter of the preparation of the manuscript for a report on the breeding and feeding of sheep was referred to Messrs Thompson and Conger, with power to act.

On motion of Mr. McDonald, the claim of Poole Brothers for printing, which was referred to him for adjustment, was allowed in the sum of $500, and the Secretary was ordered to draw a warrant in their favor for that amount.

On motion of Mr. McDonald, duly seconded, it was ordered that hereafter no privilege be granted or sold in the space under the grand stand which requires the use of fire of any kind, and that no exclusive privilege of any kind or character be let during the State Fair.

On motion, Mr. D. E. Winchester, of Franklin, was appointed as custodian of the Fair Grounds from April 1, 1902, to February

1, 1903, at the salary of $1 per day under the same terms and conditions stipulated in the contract of Mr. W. H. Stearn, the present custodian.

On motion of Mr. McDonald, the manner of locating and granting a privilege for an eating-house on the Fair Grounds during the training season was referred to Mr. Claypool with power to act.

On motion of Mr. McDonald, the chicken prize list submitted by the committee from the Indiana Poultry Association was adopted.

On motion of Mr. McDonald, the Secretary was instructed to receive bids for printing the premium list for 1902, and other printing matter to be used during the season, and that said bids be submitted to the Executive Committee of the Board.

On motion, it was ordered that the Woman's Rest Building be enlarged, and that the same be referred to Mr. Claypool to have plans and specifications and receive bids and contract for same.

On motion, the committee adjourned to meet upon the call of the President.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE MEETING, APRIL 23, 1902.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to the call of the President, on April 23, 1902, at the rooms of the Indiana State Board of Agriculture in the city of Indianapolis.

The roll call showed all the members present, viz: Messrs. Claypool, Niblack, Thompson, Beauchamp, McDonald and Conger.

On motion the rates to picnics and other meetings on the Fair Grounds were fixed the same as last year, viz:

For grounds, race track and grand stand, $100 per day.

For grounds and grand stand, $75 per day.

For grounds without race track and grand stand, $50 per day.

The usual restrictions as to gaming and selling intoxicating liquors were ordered inserted in all contracts.

Indianapolis Racing Association, for three days' meeting, $400.

On motion of Mr. Niblack, the rates for stalls for trainers were fixed as follows:

South side stables (south of track), $2.00 per month for each stall occupied by horses.

For stalls in stables north of track, $1.50 per month for each stall occupied by horses.

On motion, the committee adjourned until tomorrow morning for the purpose of visiting the Fair Grounds.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

April 24, 1902.

The committee met pursuant to adjournment and proceeded in a body to visit the Fair Grounds, with a view of determining the amount and character of the improvements and repairs necessary to be made and done before the fair.

The Board returned from the Fair Grounds and resumed business at 2 o'clock p. m.

On motion of Mr. Niblack, seconded by Mr. Beauchamp, the matter of advertising the fair of 1902 and contracting with press agents was referred to the President and Secretary, with power to act.

On motion of Mr. Niblack, seconded by Mr. Beauchamp, the matter of building a half-mile race and training track within the mile track, was on the request of General Foster, Quartermaster-General of the State of Indiana, deferred until after the State Militia held its encampment on the grounds.

On motion, the committee adjourned to meet on the call of the President.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE MEETING, JUNE 2, 1902.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to the call of the President, at the rooms of the Board in the State House in the city of Indianapolis, Ind., on the 2d of June, 1902.

There were present: Messrs. Claypool, McDonald, Beauchamp, Thompson and Niblack.

Absent: Mr. Conger.

On motion of Mr. Thompson, seconded by Mr. Beauchamp, the contract for the construction of a half-mile race course reported by Mr. Claypool, President, was ratified and approved by the committee.

At this point Mr. Moore, advertising agent of the Indianapolis Sentinel, appeared before the Board and explained a plan for advertising the fair for 1902, by issuing a special edition of the Sentinel and having same sent out over the State to county newspapers as a State Fair Supplement.

Mr. Partee appeared before the Board and explained a scheme to issue a daily program during the fair.

On motion of Mr. McDonald, the matter of Mr. Partee's advertising scheme was referred to Messrs. Thompson, Nowlin and the Secretary.

On motion of Mr. McDonald, seconded by Mr. Thompson, the adjustment of the windstorm insurance on the hog barns as reported by Gen. B. A. Richardson, Agent, was accepted.

On motion of Mr. Niblack, seconded by Mr. Beauchamp, it was ordered by the committee that the swine barns and cattle barn, which were destroyed by the windstorm and fire, be rebuilt, and that the extension and enlargement of the Woman's Rest Building be made according to the plans and specifications submitted by Mr. Clarence Martindale, and that all necessary repairs be made on the buildings before the coming fair. It was also ordered that bids for said work be advertised for and received and that contracts for the same be awarded to the lowest responsible bidder.

On motion of Mr. McDonald, seconded by Mr. Niblack, the President and Secretary were authorized to contract for all printing, posters, tickets, badges, ribbons and all other proper and necessary supplies for the fair of 1902.

Messrs. Pierson and Wallace, of the Indianapolis Racing Association, appeared before the committee and asked the committee to reduce the price of the rate made to said Association from $400 for the use of the track for July 2, 3 and 4, 1902.

Which matter was taken under advisement by the Board.

On motion of Mr. Niblack, seconded by Mr. Thompson, a sum not less than $500 was set apart and appropriated for the purpose of assisting in getting out a special State Fair Edition cf the Indiana State Sentinel.

On motion, the committee adjourned to meet on the call of the President.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE MEETING, JULY 10, 1902.

The Executive Committee of the Indiana State Board of Agriculture met on the call of the President, at the Indiana State Fair Grounds, at 10 o'clock a. m., on July 10, 1902.

Upon the call of the roll it showed all the members present, viz: Messrs. Claypool, Conger, McDonald, Niblack, Beauchamp and Thompson.

Several matters of general importance respecting the Fair Grounds and the coming fair were discussed by the members of the committee.

On motion of Mr. Beauchamp, it was agreed that the committee visit Mr. Harry S. New during the afternoon, with a view of arranging to have President Roosevelt visit the State Fair during his visit to the West.

On motion of Mr. Beauchamp, the President and Secretary were authorized to contract for bill-posting on the best terms possible.

On motion of Mr. Niblack, seconded by Mr. Thompson, Mr. James E. McDonald was awarded the contract for printing all admission and other tickets to be used at the coming fair, except the single admission tickets, for the sum of $215.

On motion, it was ordered that all single admission tickets used at the fair be in form of roll tickets.

At this point the Board took a recess until 1:30 o'clock p. m.

EXECUTIVE COMMITTEE MEETING, JULY 10, 1902.

The Board reconvened at the rooms of the Indiana State Board of Agriculture at 1:30 p. m., and resumed business.

On motion of Mr. Beauchamp, seconded by Mr. Niblack, the matter of building pig pens, cattle barn and enlarging the Woman's Rest Building was referred to the President and Secretary, with power to act and contract.

On motion of Mr. Conger, the President and Secretary were empowered to paint and whitewash such of the buildings on the grounds as, in their judgment, needed same.

On motion of Mr. Niblack, it was ordered that the Administration Building be painted yellow.

On motion of Mr. Niblack, duly seconded, all unfinished business was referred to the President and Secretary, with power to act.

On motion, the committee adjourned to meet on the call of the President.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

BOARD MEETING, SEPTEMBER 15, 1902.

The Indiana State Board of Agriculture met at the Fair Grounds near the city of Indianapolis, Ind., on Monday, September 15, 1902, for the purpose of conducting the Golden Jubilee Fair of 1902.

The roll call showed all the members of the Board present.

There being no business of special importance, the Board adjourned until tomorrow morning and the members assumed charge of their several departments.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

FAIR GROUNDS, TUESDAY MORNING, SEPTEMBER 16, 1902.

The Board met pursuant to adjournment.

All the officers and members of the Board were present.

There being no business to come before the Board, the members proceeded to carry out the published program.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

FAIR GROUNDS, WEDNESDAY MORNING, SEPTEMBER 17, 1902.

The Board met at the Administration Building. All members present.

The matter of the Berkshire hog sale was brought to the attention of the Board by Mr. Joseph Cunningham, the member in charge of the Swine Department.

After considerable discussion pro and con, Mr. John Tilson moved that the action of the Executive Committee in permitting the Berkshire Association to hold a hog sale during the week of the fair on the Fair Grounds be ratified and approved.

Which motion was carried.

On motion of Mr. Wallace, a committee consisting of Messrs. Wallace, McDonald and Tilson was appointed to meet with the exhibitors and the representatives of the Berkshire Breeders' Association, to settle the controversy growing out of the holding of the Berkshire hog sale.

The Board proceeded to carry out the day's program.

The Board then adjourned.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

FAIR GROUNDS, THURSDAY MORNING SEPTEMBER 18, 1902.

The Board met pursuant to adjournment. All members present.

The Board proceeded to carry out the program for the day.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

FAIR GROUNDS, FRIDAY MORNING, SEPTEMBER 19, 1902.

The Board met. All members were present.

On motion, the Secretary and Treasurer were ordered to pay all premiums awarded at the fair upon statement and voucher.

The Board then proceeded to conclude the program of the Fair.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

FAIR GROUNDS, SATURDAY, SEPTEMBER 20, 1902.

The Board met on the call of the President.

The call of the roll showed all members and officers present.

An appeal from the action of the Superintendent of Horticulture by Mr. Weaver was presented to the Board.

The Board, after the statement of all the witnesses and persons interested, on motion duly seconded, sustained the action of the Superintendent.

On motion of Mr. McDonald, the matter of the grievance of Mr. Howard C. Smock, was referred to Mr. H. L. Nowlin, Superintendent of Privileges.

On motion of Mr. E. S. Tuell, which was duly seconded, all unfinished business was referred to the Executive Committee.

On motion of Mr. Niblack, the Board adjourned to meet on the call of the President.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE MEETING, OCTOBER 14, 1902.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to the call of the President.

Messrs. Claypool, Niblack, McDonald, Beauchamp, Thompson and Conger were present.

The Board occupied the day in auditing and allowing claims growing out of the fair, improvements, etc.

A complete list of which claims is in the claim docket.

The Board adjourned until tomorrow morning.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE MEETING, OCTOBER 15, 1902.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to adjournment.

All the members and officers of the Board were present.

On motion of Mr. Niblack, the Secretary was reimbursed in the sum of $18 on account of loss sustained by Mr. Wisehart, Clerk of the Course.

On motion of Mr. McDonald, the claim of the Indianapolis Sentinel Co. for $500, Supplement State Fair Edition, was referred to the President, Mr. Thompson and the Secretary, for adjustment.

On motion of Mr. Niblack, the proposition of Jenkins & Davis, to paint certain buildings on the Fair Grounds was accepted, and the President was ordered to contract with them on the terms of their proposition.

On motion, the claim of Jenkins & Davis for $531 was allowed in the sum of $519, which amount was accepted by them in full satisfaction of said claim.

On motion of Mr. McDonald, Mrs. Laura A. Fry, Judge in the Art Department, was allowed the sum of $7 for expenses incurred by her.

On motion, the President was instructed to get estimates for decorating the interior of the Horticulture Department by painting the same inside.

On motion, the committee adjourned to meet on the call of the President.

JAMES E. McDONALD,
President.

CHARLES DOWNING,
Secretary.

EXECUTIVE COMMITTEE MEETING, NOVEMBER 27, 1902.

The Executive Committee of the Indiana State Board of Agriculture met pursuant to the call of the President, in the rooms of the Board, in the State House, in Indianapolis, Ind., on the 27th day of November, 1902.

On roll call the following members responded to their names, viz: Marc. S. Claypool, John L. Thompson, Sid Conger, W. T. Beauchamp.

Mr. J. E. McDonald was absent.

On motion, the program of the annual meeting, to be held January 6th and 7th, was referred to the President and Secretary.

On motion of Mr. Niblack, seconded by Mr. Thompson, the following resolution was unanimously adopted, to wit:

Resolved, That the President and Secretary of the Board borrow for the use of the Board the sum of $3,500 upon the best terms possible, for the purpose of paying claims and the current expenses of the Board. And said President and Secretary are hereby authorized and empowered to execute a note for said sum in the name of the Board, and attach the seal of the Board thereto.

MASON J. NIBLACK.

On motion, the committee adjourned to meet on the call of the President.

CHARLES DOWNING,
Secretary.

REPORT OF PROCEEDINGS

OF THE

Indiana State Board of Agriculture

AND THE

Congress of Indiana Industrial Associations,

JANUARY 7 AND 8, 1902.

The first session of the Congress was called to order at 10 o'clock a. m., January 7th, by President J. E. McDonald.

Mr. McDonald: It is provided by law that these meetings shall be held annually, and you are here now to perform your duty. I hope you will give your attention to the deliberations of these meetings and the transactions of the important business that will come before you.

The Secretary called the roll of members of the State Board of Agriculture.

Mr. McDonald: Mayor Bookwalter will not be able to be present at this session, but we may have the pleasure of listening to him later. Governor Durbin will address you, and I shall appoint as a committee to conduct him to the room, Hon. Sid Conger, M. A. McDonald and W. T. McMahan.

The committee escorted the Governor to the room, and Mr. McDonald said:

It is with much pleasure and pride that I introduce to you the distinguished Governor of the great State of Indiana, W. T. Durbin.

Governor Durbin addressed the meeting.

The following address was made by the President, J. E. McDonald:

Gentlemen—In accordance with custom well established and almost unbroken, I take this opportunity to address you upon matters of mutual interest, and to give you an account of my stewardship. I entered upon the discharge of my duties as chief executive of the Indiana State Board of Agriculture with much misgiving, and I now draw near to the end of my labor in this position with a sense that if I have not had a full measure of success, I have done what at all times seemed to be my duty.

The opening year of the twentieth century has come. It has closed its cycle, and we can now contemplate its history. A year of unexampled progress and prosperity, the tide of production having risen beyond all previous marks to meet the ever increasing and growing demands of the consumer. The farmer, with his bountiful crops and productive pastures, added millions to the growing wealth of the world, and the mines gave up their treasures in profusion almost without stint. Every branch of American industry has been stimulated by the unparalleled activity, labor has been in great demand at a gratifying increase in wages, money has come from its hiding place and has been in competition with invested capital, interest has fallen from competition of the money lender, and real estate of all kinds has advanced in worth, as measured by other conditions. On every hand, we note the evidence of good times and a disposition to make the most of the opportunity.

While these gratifying conditions have been general, and far reaching, no American community has been more kindly treated by Dame Fortune than has our own great State of Indiana. The horn of plenty has been emptied into her lap, as it were, and upon every hand we catch the glad note of thanksgiving for manifold blessings that have come to the merchant, the artisan, the professional man, the laborer, the stockman, and the farmer. Bountiful crops and a growing demand for all of the products of the soil have given confidence and riches to the farmer. A demand that comes from his prosperity has poured riches into the coffers of the manufacturer. It has been a gratifying year for the stock industry, marking a new era in the interest of live stock improvements and reproduction, and shows a full measure of prosperity for this great and growing source of state and personal wealth. The causes that have brought about these gratifying, and I hope to be long continued conditions, are manifold, but I leave this part of the discussion to those who have more time and a stronger inclination for such argument. In contemplation of the many advantages offered by our great and resourceful State, I realize that there are still greater possibilities for the future. Let not the measure of our success in 1901 be the end of our stride toward the goal that can and will bring us ultimate and greater success. Our broad and fertile fields, our almost boundless pastures, and the marked improvement in methods have made Indiana famous as an agricultural community. Our other industries and interests, vast in their aggregation, have always been and always will be overshadowed by the product of the brain and brawn of the husbandmen.

This Board is just closing the first fifty years of its existence; the half century has meant much to Indiana and Indiana institutions. It tells an interesting story of remarkable advancement. In 1850, the number of farms under cultivation in the State was 93,876, with an average acreage of 136 acres; or in all, 5,046,543 acres of improved land, with 7,746,870 acres of unimproved. Today the acreage of improved land, used in farming, is 16,311,226, while the unimproved is but 5,485,034, and the farms number 202,801. Measured in the commercial measure of dollars and cents, the value of lands, fences and buildings fifty years ago was $136,385,173; implements and farming machinery, $6,704,444; and of live stock, $22,478,555; or in round numbers, a grand total of $165,570,000. Fifty years later statistics have changed, showing that the farm values are represented by the following surprising figures: For land and improvements, $874,324,110; improvements and machinery, $21,867,528; live stock, $115,654,086, or a total of $1,031,845,624. This is not a fair estimate of values today, for since these figures were gathered, all property of this character has rapidly and substantially increased in value.

In 1850 there were 315,000 horses in the State. In 1900, 859,000. In 1850, 6,600 mules were listed, while the returns of the last enumeration shows 67,500 of these sturdy and now valuable animals. Milch cows in 1850 numbered 284,544, and in 1900, 664,000, while cattle of other classes were given as 689,891 in 1850, and 987,270 in 1900. Swine reported in 1850 were 2,263,176, and in 1900, 3,320,000. In 1850 there were 1,112,500 sheep in Indiana; fifty years later we find but 1,081,133. These figures are interesting at this time, when we are celebrating the semicentennial of the organization of this body, full of significance of the changes that have come to the great interests that go to make up the wealth and stability of our great commonwealth.

The product of the soil has added almost untold wealth to our State in the fifty years that have marked the great progress of the community. During that time, we have seen wonderful improvements in methods and a marked increase in acreage. Crops are now almost a certainty, and production only measured by nature's laws. Since 1850 the increase in the production of wheat as compared with 1899 was 25,142,641 bushels; of corn, 98,282,441 bushels; oats, 26,146,172 bushels; barley shows an increase over 1850 of 222,442 bushels, while buckwheat shows a decrease of 101,698 bushels. For a more comprehensive comparison, there was raised in our State in 1899 six times the barley, three times the corn, six times the oats, six times the rye and nearly five times the wheat that was husbanded in 1850.

There are other interesting and instructing statistics relating to Indiana's farm products. In 1899 the production of clover and timothy hay amounted to 3,215,426 tons; the potato crop of the same year was 5,441,672 bushels, while of sweet potatoes 135,560 bushels were produced; 1,000 tons of broom corn, 790,000 gallons of sorghum molasses, 11,891,464 pounds of tobacco, 144,500,000 gallons of milk, 31,509,140 pounds of butter, 1,083,403 pounds of cheese, 1,212,000 dozen of poultry, 39,069,000 dozen of eggs, and 4,631,477 pounds of wool were among the products of the farm, while returns show great values from the garden and truck farms in the various parts of the State not here enumerated.

To the student, to the individual who makes comparisons and deductions therefrom, this will inspire the gratifying conclusion that with improved methods and the application of modern ideas in farming, as well as in other business pursuits, we have been able to expand in a way that has given us prosperity, wealth, standing and happiness. The farmers of this opening era of the twentieth century must keep on advancing. He must keep in the march of progress, stepping to the tune of advancement and improvement, ever ready to quicken his pace when the columns ahead shall have moved a step in advance. There are many other interests in our great State, in which we all must and will show an interest. We are a resourceful people with splendid traditions as record makers and record breakers, proud that we may be of the great class that are the bone and sinew of the body politic, we must accord to the manufacturer, the artisan, the miner and the builder the honor that is his due. Millions upon millions of capital are invested in manufacturing plants, giving thousands an opportunity to earn an honest living and gain competence. Since 1850 conditions have shown a wonderful and far-reaching change here as well as in the production from the farm. There was then but 13,748 men employed in the various factories of the State, that were operated upon a capital of less than eight million dollars; the value of the products being but $13,726,000. The report of 1890 shows that in Indiana in that year, there was employed 179,590 men at a wage of $81,540,000, and that the product has reached the value of $304,035,000. The story told in the figures presented is one that must awaken a sense of pride in the heart of every true friend of our great State, and I hope that the splendid showing is but the introduction of a better and broader prosperity.

The State Fair of 1901 will go down in history as a record breaker in more ways than one. The show in all of the departments was most gratifying and complimentary to the managers. The short crops in several of the standard cereals and vegetables cut down the display somewhat, but it was made up in other branches of the department. This was the story told by all of the superintendents. The attendance was phenomenal, taking into consideration several discouraging conditions that were unavoidable. The weather of Tuesday and Wednesday was very unpropitious, being cold, raw and unpleasant. These same conditions had much to do with the failure of the night attraction in a financial sense. The death of our beloved Chief Executive of the Nation, William McKinley, coming so suddenly and so unexpectedly, cast a pall of gloom and sorrow over the whole country. This, as a matter of course, kept thousands away from the city and the fair, for in every city, town or hamlet, memorial exercises were held on Thursday, making it imperative that the citizen be at his home to pay his last tribute to the noble dead. The success of the fair from a financial standpoint will be best seen and understood by a careful examination of the reports of the Secretary and Treasurer. I am glad, indeed, to anticipate their information therein contained by the statement that the figures show that it was the most successful fair from a financial standpoint in the history of the Board. Early in the year, when the announcement was made that the Supreme Lodge of Odd Fellows would meet at Indianapolis in September, arrangements were at once made for holding the State Fair the same week. While there was a well expressed sentiment among several members of the Board that this might be a mistake, the idea predominated, and a conference was at once arranged with the representative of the Odd Fellows, when an understanding was arrived at, mutual concessions made and an active interest awakened. For that part of the display made at the Fair Grounds during the week by the uniform body of the Knights Militant, the sum of one thousand dollars was paid in premiums. The State Fair also provided tents for the accommodation of the visitors at an expense of about $150. For the use of the tents, we are under obligations to Governor Durbin, General Foster and General Ward, as well as for other favors and courtesies extended during the week. In making up the program for the State Fair, it was agreed that we should offer some new and popular attraction. With this end in view, I opened negotiations at once with the managers of Sousa's famous band, which we were able to secure after concessions on both sides, at a cost of $3,500 for the four concerts. This, with the Odd Fellows' Encampment, made the extra attractions cost the State Fair about $5,000, and I believe that these attractions not only interested the thousands of visitors on the grounds, but added greatly to the net profit of the year.

I believe the time for a purely agricultural State Fair has long been past. The people must and will be interested along new lines. We can not hope to keep pace with the times, if we insist upon its being and continuing a farmers' show and a fair only for Indiana. It should be, and I hope to see it, a great annual display of the many and varied phases of the activity, thrift and enterprise of modern life. The State Fair is successful first, in its power to attract the people and have them pass through our gates, and then in the display of interesting and instructing features of modern progress. The product of the farm, the garden and the orchard; the handiwork of the artisan, the housewife, and the needle-woman; the herds of cattle, the sheep and the hogs, the horses, and the tests of endurance and speed, all combine to make an interesting study; but we are now where we must go beyond these to successfully conduct a great institution like the State Fair. We must not neglect these important and dominant features, but add other and interesting attractions. Renewed interest in our annual meetings and continued prosperity depends upon continued interest upon the part of the managers of the fair and continued advancement. Nothing in these busy, hustling days has been so well demonstrated as that enterprise meets reward. At no time were our people less bound by rules and precedent, more willing and more able to listen to new claims, to offer a fair field to the efforts that extend the boundaries of knowledge and satisfies the new and the novel. If the Indiana State Fair is to keep its place as a great educator and exposition, we must be quick to adopt new methods. The success of the fair of 1901 ought to be an object-lesson and a starting point for a still greater fair in 1902. The people will support a broad and liberal management, and I believe that the present policy of the Board, if maintained, will not only meet their indorsement, but their hearty approval. I do not believe that the farming interests as well as the stock interest should be at all neglected, or that there should be anything detracted from that part of the display that will interest the stockmen. But I believe that these should be made the predominant features of the Exposition and that the present liberal and varied premiums should be maintained; but I do believe that all efforts should be made in the direction of solving the problem of how to increase the drawing powers of the State Fair, which is another way of saying how best to provide a full and attractive reflection of modern progress.

Under the statutes, as they now stand, the Indiana State Board of Agriculture has but few duties, if any, beyond the management of the annual State Fair, and the compilation, publication and distribution of the annual report. The wisdom of the acts of the several Legislatures that have curtailed our powers and duties, and have removed us from the seeming original intention of the framers of the act that originated the Board has been given attention before, and conditions at this time will not allow its discussion. It is a condition, not a theory, that confronts the Board. The statutes provide for an experimental station at Purdue, and that regular bulletins be issued, that the farmers' institutes be managed through and by this same agency; in fact, to this splendidly managed educational and experimental institution, is given powers and functions that were once enjoyed and performed not nearly so well by the Indiana State Board of Agriculture. Statistics of the agricultural resources of the State are now gathered and compiled by the State Statistician. The horticultural interests are watched by the State Horticultural Society, and the

Forestry Department is given to a special board. The live stock sanitary system is removed from our domination, and other functions of the Board have been taken away by the laws that have from year to year been added to the statutes of the State. I do not believe that there is any reason or a demand for a change in condition that will take away from the State institutions as now constituted, any of their present rights or power. Few States can boast of a better institution of its kind than Purdue, and I take pleasure in especially commending the agricultural section of the school. I do not think that the management of the farmers' institutes could be more successful than now, and I am of the opinion that the present condition should remain undisturbed. That these meetings, as now conducted and stimulated by the liberal appropriation made by the last Legislature, are working to an excellent end, all will admit. I hope to see the present conditions continue, and that Prof. W. C. Latta, who has so ably managed the meetings, and his able corps of assistants, will have the hearty co-operation of this Board and all friends of agricultural advancement everywhere.

In harmony with the sentiment expressed at the meeting of the Delegate Board in 1901, the State Board of Agriculture presented a memorial to the General Assembly of 1901, asking that the sum of $41,000 be appropriated for the purpose of purchasing the 134 acres, that part of the State Fair Grounds held by lease and under an option to purchase at the rate of $300 an acre. The committee, made up of members of the State Board of Agriculture, did their whole duty in the premises. The legislative committees, to whom the bills providing for the appropriation had been referred, both in the Senate and in the lower house, were almost unanimously in favor of the measure, and favorable reports were made to their respective houses by these committees. The sentiment expressed by the individual members of the Legislature, especially those who were interested in agriculture, were so favorable that but little concern was felt, and it was almost taken for granted that the appropriation would be made without hesitation. But we had not taken into consideration an important and dominant feature in legislation, the political exigency. Our proposition was satisfactory, the State had the money to spare, but we were defeated because the game of politics demanded a different move. I think that the State owes a more liberal support to the Board than it has received in the past. Our sister States, for the asking, give liberal appropriations for the purpose of making needed improvements upon their grounds and for the maintenance of their boards. In Illinois and Ohio, with which fairs we come in direct competition and are subject to comparison, liberal appropriations amounting to nearly $900,000 have been made during the last few years. This has made their State fair grounds what they should be—permanent and commodious, attractive and comprehensive.

At the meeting of the Board in September, after the close of the Fair, I was instructed by a resolution unanimously adopted, to close a deal by which we were to acquire full title to the 134 acres of land held by lease and under option of purchase. I at once, in accord with the provisions of the resolution, appointed Hon. Mason J. Niblack and Hon. M. S. Claypool as the other two members of the committee, to arrange for a loan of $40,000 and to make the purchase. The money was secured and all details settled, but up to this time we have been unable to meet the wishes of the Board on account of the refusal of the owners of the land to carry out their part of the contract. Nine years ago, when the option was taken, land in the neighborhood of the Fair Grounds was valued at $300 per acre, and upon this basis this option was taken. Today this land, less valuable than that used by the State Fair and less advantageously situated, is selling for $750 to $1,000 per acre. At the time of the execution of the lease and option, it was provided that one-third of the purchase money should be cash, one-third in one year and one-third in two years, and the owners, after refusing to accept the whole amount in cash, which was tendered, were offered and tendered the sum of $13,400 in accordance with the provisions of the contract. Again we were refused the execution of the deed on account of our refusal to pay rents that were not a lien against the land, a doubtful claim upon the Board. I am much disappointed that this deal could not have been closed under my administration, for we had arranged to borrow $8,000 at 5 per cent. interest, and with $5,400 from the profits of the late fair, could have met the first payment on the land. I hope to see immediate action taken toward instituting the necessary proceedings in the courts, to compel Mrs. Smith to carry out her part of the contract, as we have been diligent and have exhausted all means and methods to bring about this much desired result.

In July last, at the request of Governor W. T. Durbin, General Foster and Adjutant-General Ward, I turned the State Fair Grounds and buildings over to the State for the use of the Indiana National Guard. The annual encampment of the several regiments was held thereon in the latter part of the month, and all pronounced it an ideal camping and reviewing ground. For this we received the thanks of the Governor and the officers of the several regiments of our State Militia. I believe that this action should be taken annually, and that such changes as will best subserve the interests of the State should be allowed and provided.

At an early meeting of the Board in 1901, it was ordered that the race track at the Fair Grounds be put in first-class condition, and that an effort be made to interest the trotting horse interests in its use as a training center. I at once appointed Mr. M. S. Claypool as a special committee of one, with instructions to use due diligence in fitting the track for training. Mr. Claypool recommended a change from the system followed by the Board for years, asking that he be empowered to purchase a team of good mules and another horse to work with the one already owned by the Board. This power was granted, and at an expense of $678, he provided two good teams, an up-to-date track harrow, and the necessary wagons.

harness, etc., for the care of the track and the grounds. I consider this one of the best investments ever made by the Board. It gives us absolute control of our work, and allows it to be done in a way entirely satisfactory to the Superintendent. This could not be done under the old method of hiring teams and laborers as needed. The race track has grown in popularity, a large number of good horses were trained there during the season of 1901, and the prospects are that a still larger number will occupy the stables in 1902.

I have but few recommendations to make to the incoming Board. I believe that at the earliest possible moment a half-mile race course, or training track, should be constructed inside of the present mile track. It should be so constructed that it will be completely drained and made of such material that it will soon dry and be in condition for use after a rain. I think that the grounds on the interior of this half-mile track and directly in front of the grand stand should be put in first-class condition for a drill ground and athletic park. During the last fair we felt the need of a level and commodious drill ground, and if the suggestion that the State Militia holds its regular annual reviews at the Fair Grounds is adopted, such an improvement will be in the nature of a necessity. With the outlay of a small amount of money this work could be done, as the two teams owned by the Board could be used to excellent advantage in its construction. I would also suggest that a broad and substantially built driveway be constructed around the outside of the race track, so that the visitors can have an attractive drive and easy access to all parts of the ground. I believe that a new department should be created and a superintendent appointed, who would have charge of the musical and other special attractions given from time to time upon the grounds during the fair. Under the present arrangement this duty seems to devolve upon the President, and is oftentimes neglected.

Well directed efforts should be used to interest the people of Indianapolis in the State Fair. No one thing brings more people and money to Indianapolis than the annual meetings of the State Fair, and the meagre support given the institution by the merchants and citizens is a reflection upon the enterprise and push of the capital city. A careful and conscientions scrutiny of the figures furnished by the railroads and the transfers handled by the street railway, shows that a very small per cent. of the crowds that went to the Fair Grounds in 1901 were citizens of Indianapolis. The people of Indianapolis owe a more liberal support to the State Fair. The importance of their patronage should be impressed upon them and every effort possible made to attract and merit their good will and support.

I want to congratulate the managers of the State Fair upon the excellent services rendered in 1901 by the Indianapolis Street Railway. The service was all that could have been asked, the immense crowds being handled with regularity and despatch. Complaints of former years were not repeated, and the service met all of our requirements.

I would not perform my duty were I to close this address without expressing my high appreciation for the uniform courtesy and kind treatment that was accorded me by the officers and members of the Board while occupying this honorable and responsible position. I am especially grateful to the members of the Executive Committee for their active participation in the work of organizing the fair, and their willing and hearty co-operation. To Mr. Charles Downing, the efficient and popular Secretary, much of the credit for the success of the fair of 1901 is due. He is a careful, painstaking and ever watchful official, thoroughly conversant with the duties of his position, and ever ready to perform them. His uniform courtesy in the discharge of his official duties and his conscientious and well directed efforts in behalf of the State Board of Agriculture are well deserving of commendation. He should be re-elected to his present position without opposition. Mr. Lagrange, the Treasurer, and Mr. Peed, the General Superintendent, are also entitled to the thanks of this Board, and especially from myself, for their efficient services during the year.

In conclusion, I will say that when I surrender this emblem of authority at the close of this session, I will do so with feelings of pride at the record made in 1901. I will end my labors as President, feeling that we are entitled to all that comes from a successful management of an institution like the State Fair of 1901. I hope that my successor, whoever he may be, will give to this office the personal attention that its duties deserve. No man can successfully manage an institution of this character without giving it much of his personal attention, and no member of this Board should be elected to this place unless he can give it his best efforts and considerable of his time.

I will end my labors as President, expressing the hope that my successor in office may take up the work where I leave off, conscious of the hearty good will and united support, not only of the Board, but of the people of the State.

The following committees were appointed by the President:

Auditing Committee.—Hon. J. C. Haines, Chairman, Hon. Knode Porter and Hon. J. C. Bridges.

Committee on Credentials.—M. A. McDonald, Chairman, Fred E. Wheeler and M. S. Claypool.

On motion, the President's address was referred to a committee of three for consideration.

Committee on President's Address.—William M. Blackstock, Chairman, Robert Mitchell and H. F. McMahan.

Secretary Downing: There are several reports of Department Superintendents that have been filed. It has been the custom to have them filed without reading, as they are of interest only to the incoming Board.

By consent the reports were referred to the Secretary.

The Secretary's report was read, and on motion it was referred to the Auditing Committee.

The report of the Treasurer was read, and on motion referred to the Auditing Committee.

SECOND SESSION.

The second session of the Indiana State Association of Fair Managers was called to order at 2 o'clock p. m. Hon. H. L. Nowlin, President, in the chair.

The following paper was presented by Mr. Nowlin:

Gentlemen of the Indiana Association of Fair Managers: I wish to congratulate the managers of the fairs of 1901 on the great success attained. Very few were failures either in exhibits or from a financial standpoint. It is true that in some sections of our great State the severe drought cut the products of the farm to such an extent that exhibits were short and many farmers felt themselves unable to attend. We are glad to note, however, that these cases were the few exceptions.

The program for this meeting states that circuits will be given an opportunity for organization, etc., but I think there are a number of other things that might be profitably discussed by the entire session. I do not believe the officers of fairs always appreciate the advantages that would be derived from a more uniform classification. Of course hardly any two fairs can give the same amount of money, but any circuit can so arrange their lists that exhibitors can follow the entire circuit. I have exhibited swine for a number of years and have some ideas from the exhibitor's standpoint. It may be argued that exhibitors have no organization, and there is none in name, but they usually understand each other fully, and are going after the most money, and the circuit that is the best organized and gives the most uniform classifications will get the best exhibits. To illustrate: One year I exhibited in my home circuit four weeks and would gladly have continued there, but I could not show my stock to advantage, and the next week found me at Terre Haute, the following week in Illinois, week following this in eastern Indiana, then over in Ohio, and finally back on the original circuit. The result was that some of the fairs were without a swine exhibit. What is true in one department is true in all, and I wish to ask each circuit in Indiana this year to give this subject more attention, and I believe it will be to our mutual benefit.

Good circuits advertise each other's fairs at a less cost and much more successfully than it can be done in any other way.

Another subject that always troubles all fairs and is of vital importance, is the concessions allowed on the grounds. Even if there are no objectionable features admitted, the arrangement of the outfits can greatly mar the beauty and convenience of the grounds.

No fair association, to my knowledge, has ever yet been able to stem the tide that sets in against it if it makes the mistake of admitting objectionable shows. Few people go to a fair to see the shows, and the few paltry dollars received for the concessions are as nothing compared with the patronage these shows destroy.

Gambling of every description should be prohibited. Some of the little ten-dollar innocent looking games that we so often find on the fair grounds take hundreds of dollars from their patrons. If gambling must go, get a straight-out hieronymus and let it go as such; but I can see no justification in allowing anything of the kind on the grounds. My views on this subject are so strict that I have not allowed a cane rack, baby rack, or shooting gallery on the Indiana State Fair Grounds the past three years, and even go so far as to not allow the sale of a glass of lemonade to be made with the privilege of drawing for a prize. I believe this policy should be followed out at all of our fairs.

Many privileges are sold too cheap, and it should be made the Privilege Superintendent's duty to ascertain what a concession is worth instead of letting all the ground out at so much per front foot. Usually privilege people have the money in their pockets to pay their privilege in advance, and if fairs will unite and adopt a rule requiring cash in advance and then enforce it, it will not only gain better returns, but will get a better class of concessions and take an immense load off the Superintendent of that department.

I have found that the only way to succeed in getting along with these people is to make all your rulings after giving them careful consideration and then enforce them to the letter.

On the Privilege Department, more than any other one thing, in our local fairs, depends their success or failure.

I end my third term as Chairman of this Association with the close of this session, and I wish to thank you all for the honor bestowed upon me and for your uniform courtesy and assistance, and bespeak for my successor that kindly feeling and co-operation you have so generously bestowed upon me.

Mr. Nowlin: I think there are a number of other things that it might be profitable to discuss in the session. I have exhibited swine for a number of years, and have some ideas from the exhibitor's standpoint, as well as from the standpoint of the secretary of a fair. It may be argued that exhibitors have no organization, and there is none in name, but they usually understand each other fully, and are going after the money and the circuit that is the best organized will get the best exhibitors. To illustrate: I exhibit in my home circuit for a time, and would have been glad to continue there, but I could not show my stock to advantage. The next week found me in Terre Haute, the week following in Illinois, the next week in Eastern Illinois, and the following week in Ohio. That caused me a great deal of inconvenience, and the result was that some of the fairs in our own neighborhood were without swine exhibits at all.

Another subject that always troubles all fair managers is the concessions allowed on the ground. Even if there are no objectionable or fake shows, the arrangement of the outfits often mars the beauty of the surroundings. I have had more experience in this line than in any other single line of work on the fair ground. I believe there is more in it than is usually thought of in connection with the fair. I think a rule should be made to never admit objectionable shows. Few people go to see the shows, and the few paltry dollars received for the concessions are as nothing compared with the patronage the shows destroy. Gambling of any description should be prohibited. Some of the little innocent looking, ten-cent shows we find on the grounds take hundreds of dollars from their patrons. If gambling must be on the grounds, get a straight-out hieronymus and let it go as such. But I can see no justification for allowing anything of the kind on the grounds. I have not allowed the cane rack, shooting gallery or things of that kind on the State Fair Grounds, and have even gone so far as to not allow them to sell a glass of lemonade and draw a prize package for the money. I believe this policy should be followed out at all of our fairs. Then there are many concessions that are sold much too cheaply. There are privileges at the State Fair Ground that I have sold for almost ten times as much the last year as I did the first year. Some of these people invest less than a hundred dollars and clear from two to four hundred at each fair. Usually privilege people have the money in their pockets to pay for their privileges in advance, and if fairs will unite and adopt a rule requiring cash in advance, and then enforce it, it will not only give better returns, but will get a better class of concessions. I have found that the only way to get along with these people is to make all your rulings and then enforce them to the letter. On the privilege department more than any other one thing depends the success or failure of the fair.

Secretary Blackstock: The second annual meeting of the Indiana State Association of Fair Managers was held in these rooms on January 9, 1901, and a stenographic report of the proceedings published with the report of the annual meeting of the State Board of Agriculture. You will find the report on pages 66 to 68, inclusive.

SECRETARY'S REPORT.

To the Members of Indiana Fair Managers' Association:

On January 9, 1901, the second annual meeting of this Association was held in the rooms of the State Board of Agriculture. A stenographic report of the proceedings of said meeting is published in the State Board's Annual Report for 1900 on pages 66 to 68, inclusive, hence as the business of that meeting is already made public it is only necessary for your Secretary to refer to these minutes by way of suggestions that may chance to interest the Fair workers present at this, our third annual session.

The special rule that was recommended one year ago compelling speed horsemen to come up to the Secretary's office and pay their 5 per cent. entrance on or before 12 o'clock, instead of in the judge's stand, in the old way, after the race is called, was heartily approved by nearly all our Associations, and this item was inserted in their published conditions. The five-heat race system, which means that no race shall have more than five heats, was adopted with satisfactory results last year by several of the best meetings in Indiana. This is the rule of the Illinois and Indiana State Fairs, and should be uniformly observed upon all race tracks. It is the humane idea of testing speed within the reasonable limit of best 3 in 5, but no more than 5 heats, instead of the old horse-killing idea of a fight to the finish in possibly 6, 7 or 8 heats. In speed classes it is usual to allow a horse to enter in more than one race with the privilege of paying entrance only in the race in which he starts. This privilege is now often abused. Green horses are often entered in each and every class at the same meeting from the "slow" class to the "free for all" for the purpose of fraudulently filling the fast classes and to prevent the Secretary from reopening and getting his races properly filled except as the horsemen themselves may dictate, therefore every Secretary should protect his Association by reserving the right to declare which races are filled and which are not filled. This resolution should be in the published conditions of every racing circuit.

At our last meeting numerous suggestions were offered in regard to methods of advertising, but no definite action thereon was taken. It will always be conceded that the worst managed fairs are those in which the managers are furthest away from the hearts and confidence of the masses of the people, and many fine exhibitions are failures because the people in those localities are not educated up to the point where they can rightly appreciate the object lessons that are taught at our best fairs.

For 1,000 years fairs have been popular events in the development of the material natural resources of the various countries in which they were held, but they have only been successful when the influential people of the respective communities were in close partnership with the fair managers. This nearness of copartnership can at the present time in this country be best secured through co-operation of the newspapers. Every one reads the papers, and from this source of knowledge the residents of the city as well as the country generally form their opinions upon almost every public question, and since the establishment of the rural route system fair managers will lose their finest opportunity for success if they fail to use this means of reaching the intelligent masses of the rural districts. The old flaming posters of "Best Fair on Earth" and other meaningless catchwords will not catch attention any more. This form of advertising is out of date. You must give the patrons of fairs sensible reading matter about which they can think and talk, if you desire their friendly cooperation.

It was suggested at our last meeting that a literary bureau of information and education along the lines of the popular industries of Indiana might be taken up by the State Board with profit to the State Fair and local fairs as well. Thus in a condensed form printed slips could be prepared at small expense touching various topics containing valuable facts of special interest as above indicated. Those slips could be forwarded to County Secretaries for insertion in the local newspapers of their counties, and thus not only the State Fair might be greatly popularized but local organizations would be equally benefited.

The above items are merely suggestive and are intended only for consideration or discussion as may appear fitting by the members now present.

Numerous other questions might be noted and doubtless will be by others who are more capable of discussing the important business at hand.

We are here for mutual conference concerning the great interests which this delegate body represents. Each one present should freely tell of his observations of better methods in all departments of fair management.

Respectfully submitted,

W. M. BLACKSTOCK,
Secretary.

The five-heat race system was adopted with satisfactory results last year by members of the best meetings in Indiana. This is the rule at the Illinois and Indiana State Fairs, and should be universally observed upon all race tracks. It is a humane idea of testing speed within reasonable limit. In speed classes now it is the usual thing to allow a horse to enter in more than one race, with the privilege of paying entrance only in the race in which it is started.

I wish to speak now about advertising the fairs. Now everybody reads the newspapers, and from this source of knowledge the residents of the city as well as the country generally form their opinions upon every public question, and since the establishment of the rural routes, fair managers will lose their fairest prospect of success if they do not make use of this medium of advertising the fairs. The old flaming poster, "The Best Fair on Earth," and other meaningless catchwords will not attract attention any more. This form of advertising is out of date. You must give the patrons of fairs sensible reading matter about which they can think and talk. A bureau to distribute this sort of information might be taken up by the State Board with profit to the State Fair as well as to the local fairs. Thus, in a condensed form, printed slips could be forwarded to the County Secretaries for insertion in the local newspapers of their counties; and thus not only the State Fair might be greatly popularized, but local organizations would be equally benefited. These are merely suggestions, and are presented only for consideration and discussion. Numerous other questions should be discussed, and doubtless will be, that are very important to fair managers. Each one present should freely tell of his experiences and observations, should tell of better methods in all departments of our work.

Mr. Mitchell, Princeton: It seems to me there ought to be a program arranged and the subjects assigned, so as to bring the matter up in good form. In your address and in the Secretary's report a number of good suggestions are made. We are running the forty-seventh year of our fair. We were incorporated with a fifty-year limit, and soon will have to reorganize.

The suggestion the President made in regard to gambling is a good one. At our fair the people send their families without any fear of their being contaminated. We allow nothing of that kind. We will not even allow the little prize packages with a ring in each to be sold. These small things are the first step along the road to gambling.

The circuit forming is a very essential thing. We have a circuit in southern Indiana. We have it arranged so that the fairs do not conflict with one another. Carmi, Ill., is asking to come into that circuit; some Kentucky fairs are already in it.

It is a question how we are going to divide the State up sufficiently well to make good fair circuits all over the State. It seems to me it is a difficult matter to gauge the charges for exhibits. We charge by the foot, and if they do not run their affairs according to the rules of our fair they are stopped. The exhibitors who start in this circuit find the rules prevailing and the treatment they receive at different fairs is confusing and troublesome to them. Gate receipts differ in different fairs. I think this should be remedied, and have all the fairs charge the same. I think we ought to try to get a uniform series of rules and treatment of exhibitors. We haven't had any special attractions for some years at our fairs. We do not pay much attention to them, but try to do good permanent work and give exhibits that are interesting to the people who come. The manufacturing industries at these fairs are getting better and better every year.

Mr. Dungan: You don't allow any whisky sold on the ground, do you?

Mr. Mitchell: No, sir, we do not.

Mr. Dungan: How can you prevent them from bringing it in in bottles?

Mr. Mitchell: That has been tried. We have been able to stop most of them and have taken the bottles away from them. We usually know them. They can not bring much of it in and drink it on the grounds. It is easy to detect a man selling whisky. We have men to watch for them, and these men usually get the offenders.

We have a great deal of satisfaction out of our dinner tables. The tables are conducted by the church people. We do not charge them much for the privilege, but we require them to furnish good meals. We give them all the help they want, but we require them to furnish such meals that when our people go there and pay for it they get a good, wholesome dinner.

Mr. Blackstock: Do you require privilege people to pay in advance at the Harrisburg Fair, as you do at the State Fair?

Mr. Nowlin: No, we do not.

Mr. Blackstock: Do you think that rule could be observed by the county fairs? If it could be observed it would simplify the work of the fair very much. If that rule was to be adopted all the fairs of a circuit or of a vicinity ought to observe it, so that the privilege people would understand it before they came. If a rule of that kind is to be adopted by any number of fairs it ought to be made as general as possible, and I should like to hear an expression of opinion on this subject.

Mr. Mitchell: That was one of the things I meant when I spoke of uniform treatment. I was superintendent for eight years, and I never put a man's name down for a concession until the money was paid. They always have the money, and if you ask for it you will get it every time. It does not do to let them slip along without paying until the fair is over, for every once in a while some of them will get away without paying you.

Mr. Nowlin: I will give you my experience in that line. When I first suggested that in my report as Superintendent of Privileges some of the members of the Board said I could not sell five hundred dollars' worth of privileges at the State Fair and collect the money in advance. I did sell over three thousand dollars of privileges, and since then they have concluded that these fellows have the money and that we can get it before we let them in. The idea with the privilege people is this: If they can get on your fair ground and have until say Thursday to pay, and have good days on Tuesday and Wednesday, and find on Thursday or Friday mornings that it is likely to rain or be an unpleasant day, they will get away without paying for the balance of the week. Last fall before the fair closed I had applications for $1,200 of privileges, and these people were all willing to make twenty per cent. of the payment in cash to reserve certain places. Take the score card privilege. Every fair needs a score card. The people who go to see the races can not take a proper interest unless they have a score card. Suppose a man pays half the price for the privilege in advance, and when fair time comes he says he has not got the money for the balance, then it is too late to get anyone else to get it out. That is one of the privileges for which I always get all the money in advance.

Mr. Blackstock: What is customary over the State? Is it not generally the rule that one-half the privilege money is paid in advance

Mr. Fitch: I have not had charge of the privileges in our county, but I have examined the permit books, and I find that most of them pay about 20 per cent. in advance and the balance as they make it, probably by Wednesday night, and probably it is not paid at all. In our circuit they usually start in rather mild, and in the first county pay pretty well, but it gets worse all the way through the circuit, until at the last we hardly get anything out of them. We collected $324 out of $500 which should have been collected. It was considered a wide-open fair. There is no need of having a wide-open fair. The best fair is one where you feel like taking your wife and children and recommending other people to go and take their families.

I move that a committee be appointed to frame the sentiments of this meeting in favor of such a fair.

The motion was seconded by Mr. Bridges.

Mr. Fitch: The way the privilege people act at some of the fairs is a rank outrage on the people of the county. Most of these shows have attachments to them that should be watched and eradicated or they will injure the fair.

Mr. Blackstock: The privileges at the Lafayette Fair amounted to about $1,300, but it took about three men all week to collect it.

Mr. Fitch: I wish to include in the resolution the sentiments of your report, Mr. President, and also of the Secretary's address.

Mr. Nowlin: My understanding of the resolution is that this association should recommend a set of rules that would be of benefit to the fair associations of the State. They are not obliged to accept them.

Mr. Lyons, Jay County: There is one thing in your address that seems to fit my case. That is in regard to keeping all games from the fair ground. We adopted that rule twenty years ago, and have lived up to the letter of it. We were divided somewhat on it. I made a statement of this sort to the people who were opposed to it: "Gentlemen, if you will vote with us to keep out gambling of every kind, every dollar that we are out of after this fair is over I will go down in my pockets and pay." We got their votes. We got complimentaries issued, and I delivered one to each minister in the county. I don't think we ever had a better fair up to that time. We have kept it up and have grown in grace and have done well. I have always felt proud of it, and it pleases me to hear you speak in favor of that kind of fairs. I think the fair managers should give more thought to the management of the fairs. We must try to set people to thinking of what is right and what is wrong in fair management. We have kept our fair very well, and have never had to ask for any appropriation from State or county.

Mr. Blackstock: One point I mentioned in the opening, and that was in regard to the re-entry of horses. I merely gave my experience on that thing for the benefit of secretaries who are present. In our fair there were four horses entered in every race. They did this for the purpose of fraudulently filling those races, and after the entries were supposed to be closed they came to me and asked if the races were all filled. I said they were not. I told them they had entered the horses in the whole list; but that I considered the races they were naturally fitted for were filled by them, and the others were all empty. I think that was right. The intention was to prevent me from reopening those races. Some of them were not filled, several others were really filled; but three of the races were not properly filled. I took the liberty of ruling against them and the Association stood by me. I reopened the races and they threatened to report me for receiving entries after the races were closed, which is a finable offense. They did not report me. I mention this to show that any secretary who leaves them open is liable to run up against this sort of thing. I think every secretary should be prepared to protect himself against affairs of that kind.

The motion before the house was carried.

Under the motion Mr. Fitch, Mr. Bridges and Mr. Blackstock were appointed a committee to carry out its object.

Mr. Downing: The State Board invites horsemen to make entries in more than one class, and provides in its rules that parties who make entries in more than one class, can have the privilege of starting in any class they desire, and will be held only for the one entry. Mr. Blackstock can hold each of the entries for the entry fee where they are made as he stated they were made at his fair, because if the entries are made in good faith—and I doubt whether they have a right under the American Trotting Association to make such entries—he had a right to declare certain races filled and certain races not filled, and refilled them under the rules. If I could get entries filled by reopening races I would do as Mr. Blackstock did; but at the ordinary county fair it is hard to get races filled even after they are reopened. We usually allow them to make entries in all the classes they wish to, and then let them start wherever they want to, holding them for entries in the classes in which they start horses. You must do that with horsemen. Horsemen have a hard time of it, and it is sometimes an accommodation to a fair association to have horses start in more than one class. If you have a class starting in which a horse is eligible on Wednesday, and you have a class in which it is eligible on Friday, the ordinary horseman would be glad to go in two races in a week, especially if they are not hard races. In a fair like Lafayette where there is no trouble in getting entries it was right for Mr. Blackstock to pursue the course he did. It is pretty hard to draw the rules down very fine with horsemen. You must ask a great many favors of them, and they will ask favors of you. I have found it always best to help them, and they are usually willing to help me. I have found it a good rule to stand in with the horsemen, and I let them have their way providing they are willing to pay for it. Of course the officers must use their discretion against fraudulent entries. But where they make the entries in good faith, I think it is all right.

Mr. Blackstock: I agree with that statement, and my practice has been the same as his. I only referred to cases where a mean advantage was taken of the Secretary, and in order to force him to provide classes just for them. It is only occasionally that this happens. Once in awhile one will come across a mean horseman who will try to take a mean advantage of him, and it is well for the Secretary to protect himself, and in order to do that he must shape his conduct according to the men he has to deal with.

Mr. Downing: I have always kept the entries dark, and have not said anything about them until they were closed. No horseman can find out how many entries were in, so they do not have any advantage in that respect.

Mr. Fitch: It is possible to do this in a State Fair, but it is not possible in a county fair. The horsemen will compare notes and will know to a dot what entries are made.

Mr. Mitchell: Does your rule, Mr. Blackstock, letting them make as many entries as they please, prevail in the show classes?

Mr. Blackstock: We used to allow them to re-enter in other classes, and charge 10 per cent. or something of that kind; but we thought it was not best and do not allow them to enter in more than one class.

Mr. Mitchell: It is better to allow a horse to be exhibited only in his class. With the average committeeman a man might get a fine heavy horse and take him through every class. That does not divide the money fairly among the classes. We charge no entry fees in anything but the speed class, and our stalls are all free excepting for exhibition horses. The cattle stalls are free and bedding is furnished; the hog and sheep pens are also free. We charge for the stalls for speed horses to prevent them from putting in horses for convenience that are not meant to be entered in the speed class.

Mr. Huron: We have not had much trouble with horsemen making two entries. We allow them to do it for the purpose of accommodating them. We give them the privilege to start in different classes, and it is often an accommodation to them. We may have a few horses entered in the twenty-five and a great many in the thirty-five, and we are often glad to have some of the thirty-five horses in the twenty-five. We have had that experience every year. I have not had any trouble with the horsemen. They are a nice set of fellows; they tell you what they want and pay you for what they get, and I believe in accommodating them in every way possible.

Mr. Blackstock: My experience is that we have the most trouble with our own horses. They want to get the inside of everything, and they are down on the Secretary if he does not grant it.

Mr. Insley: I think this meeting would have been more instructive if a program was prepared and carried out. If a line of work could be mapped out for this meeting and the programs for it scattered out over the State, the managers would know what to expect when they came here. I move that the Chair appoint a committee to formulate a program for the next annual meeting.

Mr. Mitchell: Let the committee that has been appointed make up the program and report something definite a year hence.

The motion was seconded by Mr. Young.

Mr. Nowlin: I thought we had a program. We had a program arranged at one time, and I supposed the parties had the papers prepared. Only yesterday I learned that a program had not been prepared. A program committee was appointed last year.

Mr. Mitchell: Wouldn't the committee that has been appointed do to fix up the program? The resolutions certainly embody the points we want to get at.

Mr. Fitch: I think this would not be satisfactory to the committee.

Mr. Blackstock: I am glad the matter has taken this shape. Mr. Insley covers the point I wish to make. I have here a program of the Ohio State Fair Managers' Association, something similar to this Association. This leaflet contains a program of about a dozen subjects to be discussed. It is circulated before the meeting so that everyone may know beforehand just what is to be taken up. I hope the motion will prevail.

Mr. Nowlin: Would the program not come in with the other programs for this week's meetings?

Mr. Downing: Send it in and we will have it printed in our program.

The motion was carried.

The following were appointed a committee under the motion: Mr. Insley, Mr. Young and Mr. Downing.

Mr. Quick: I was glad to hear the subject of the forming of a circuit mentioned. Who forms the circuit, and how is it formed? I find in exhibiting that this is a very important matter. When we go into a circuit we frequently have to travel over the same road several times, and sometimes we have to take a back track to return home. It appears to me that in forming a circuit we should take a map and study carefully the lines of railroad and select the most convenient routes. For instance, take the road that runs from here to Madison. There is Franklin, Columbus, and other towns. In coming back to the State Fair we could follow this route and make the last fair Franklin, and then the State Fair. I think this matter should be arranged so that exhibitors need not back track. A year or two ago we started at Middletown, from there to Hagerstown, from there to Greenfield, within twenty miles of Indianapolis, then back to Middletown. That occupies too much time. It is also too expensive; there is not enough money made attending the fairs in that way to pay any extra expenses. I hope a circuit will be formed that will be convenient for the exhibitors.

Mr. Mitchell: In making this circuit the State Board of Agriculture ought to have the exclusive right to the week they select for the State Fair.

Mr. Nowlin: My understanding is that as soon as this meeting proper adjourns some of the circuits want to meet and arrange for the date and get information.

Mr. Morris: The question of privileges has not been discussed —I mean the class of privileges that the county fairs should give an exclusive right to. Year before last at our fair there were two merry-go-rounds; they paid a fee of $50 each. Last year only one showed up. The general impression is that the one that did not show up probably got $25 for staying away. We could readily have gotten one hundred dollars if we had granted the exclusive privilege to one.

Mr. Nowlin: In my experience there are very few privileges that could be sold exclusively without getting us into trouble. Some things, however, must be sold in that way.

ELECTION OF OFFICERS.

Mr. Insley was placed in nomination for President, and was elected by unanimous vote.

Mr. Robert Mitchell, of Princeton, was elected Vice-President.

Mr. W. M. Blackstock, Lafayette, was elected Secretary.

Mr. Nowlin announced that Dr. J. N. Hurty, Secretary of the State Board of Health, wished to address the Association.

DR. HURTY'S ADDRESS.

Gentlemen of the Association—The last Pure Food Law which was passed in 1899 makes the State Board of Health the authority for its enforcement, and the Secretary of the State Board of Health is named in the law as the State Food Commissioner. I have been making a great many investigations and studies over the State in regard to food adulteration, and feel modestly certain that I have some facts which will interest you very greatly. Certainly I can present some facts that affect your pockets most materially, though perhaps they do not affect the pockets of the farmers so much as they do the city people. Few people realize the extent of food adulteration. We find it on every hand. I sat down to a breakfast the other morning which I called a "paint breakfast," because of the adulterating matter in the foods that were presented. First, we had stewed dried beef, and that dried beef had coloring matter in it to make it appear nice and red. The coloring matter came out into the gravy and colored it, and a sample of the meat taken to the laboratory was treated, and we found the coloring in it was aniline matter. Then there was some apple butter upon the table that came from a large establishment in Pittsburgh. That apple butter had aniline coloring in it; that was also proven in the laboratory. Then there was butter which, as you know, is colored. I have no objection to that, however. Then the cream was colored. The catsup was preserved with salicylic acid and colored with aniline matter. There were five articles of food on the table at the same time that contained coloring matter.

Now the question arises whether we want to eat this coloring matter. I am inclined to a return to the good old-fashioned days when we ate pure, wholesome foods that did not have anything of that character in them.

I have a letter dated December 30, 1901, which comes from a Columbia cheese factory, Cambridge City, Indiana. I quote the following from it:

"We received sample of 'Kremo' from Chicago, an adulterant for cream. We mail you the original sample under separate cover. You can advise us as to the nature of the same."

The sample came, and upon examination I found it to be nothing but powdered gelatine. That, you know, is refined glue. This the firm offers to sell at $1.25 a pound. It can be purchased anywhere for 40 cents a pound. That is the adulterant for cream. Here are some of the things the circular says about "Kremo:"

"Pure Food Brand dried cream. Gives a body to thin cream or milk. Will permit of the reduction of cream with milk in such a way that it can not be detected by chemists.

"Kremo is the result of years of experimenting. It is now used throughout Europe, and is rapidly being adopted in America."

Remember, gentlemen, that this is nothing but powdered gelatine—refined glue!

Further on the circular says:

"Place one ounce of Kremo in a clean, dry pint measure, add gradually two ounces of cold water and stir into a thick, smooth paste that is uniform and free from dry lumps; then add enough hot water to fill the pint measure. Add to one and one-half gallons of cream one-half gallon of milk and the dissolved Kremo, and you have two gallons of cream."

In the same way water and the Kremo was to be added to milk.

That is enough to show you the intent of these people to swindle and defraud. You know if you dissolve gelatine in water it will form just like jelly, and so we make this jelly for our tables, and it is a wholesome food. These people say to dissolve an ounce of the stuff and add it to one and one-half gallons of cream, and then add one-half gallon of milk, and it will have the appearance of rich cream. The purpose of this, they say, is to "stretch cream." And they also tell how to stretch milk with it.

The people all over this State are buying this "stretched" cream and milk.

I have over two hundred samples of this kind of adulterant. This is going on all over the State. I can find that "stretched" cream and milk in our hotels and restaurants here. I can find it in South Bend and Terre Haute, and the people are being swindled out of thousands of dollars annually by this fraud.

I hold in my hand a sample sent from New Castle by Dr. Brubaker. It is a substance for adulterating lard. After you have mixed this stuff with the lard you can add water to it. You can add 25 per cent. of water to the lard after this has been added, and the lard looks pretty solid. You might suspect it, but as a rule the general purchaser, the workingman's wife and the mechanic's wife, will buy this lard because it is one or two cents a pound cheaper, and she is swindled. It is a mixture of starch and gelatine and a little burnt alum. This sells for a very high price; the men who make the stuff intend to make money out of it.

If you go to the grocery to buy syrup or sorghum, the chances are that it will be adulterated with glucose. Glucose is not an unwholesome substance, but if you are going to buy it you want to buy it for what it is, and not for sorghum or maple. Sixty-five times out of one hundred when you buy maple syrup you are buying glucose. If you buy the golden drips you get them mixed with a great deal of glucose. There is nothing injurious about glucose, but you do not want to pay a good, big price for it; if you want it you can go and buy it for what it is and not be swindled. We have in this State one of the very best food laws of any State in the Union. I have here the British Food Journal, and it is an authority on the subject. It says this about the Indiana Food Law:

"The food standards of the Indiana State Board of Health, which appear on another page, show that it is quite possible to lay down official definitions of various articles of food, and the study of these regulations may be of assistance to those authorities in England who are striving to arrive at some form of order out of chaos, which at present exist in this country in matters relating to food standards."

This Pure Food Law of Indiana is probably one of the best that has ever been written. The food law of 1899 passed in Indiana is one of the best pure food laws we have anywhere. I have the honor to be the State Food Commissioner. You ask me why this pure food law is not in force? Do you not know that however good a locomotive may be it will not run without coal? You may build the most perfect locomotive in the world and put on the best men, and it will not budge if you do not put on coal. Now, we have no coal to run this locomotive. The Legislature that passed this law furnished no means to enforce it, neither did the Legislature of 1901. That is why the State Board of Health does nothing and why your Pure Food Commissioner does nothing. I thought it might help us to present the matter to you here. We are all being swindled right and left because we are not working for the enforcement of this law.

About twelve years ago the people of Ohio had a pure food law passed, and they were wiser than we, for a laboratory was established and an appropriation furnished for its use. You can not test this matter without a laboratory. In Ohio they established this laboratory and had food inspectors. They sent them out over the State gathering in foods of all kinds, cheese, butter, canned foods, dried beef, and those articles went into the laboratory all numbered and labeled. The chemists did not know where they came from, but they made their analysis, and 30 per cent. of all the foods were found either adulterated or short of standard. Two years subsequent to that Michigan passed a law like that. Michigan also established a laboratory and gave them an appropriation of $18,000 for the enforcement of the law. They went to work to find out what foods were being adulterated, and they stopped it. Michigan found, too, that a little over 30 per cent. of the food was adulterated. Now I ask you if 30 per cent. of all the prepared foods of Ohio, and 30 per cent. in Michigan, were adulterated before they passed their laws, what state of affairs exists in Indiana? Surely as much.

Question. Have you examined any of the ground spices?

Dr. Hurty: Yes, and nearly all of them are adulterated. I have even discovered that grain coffee is being adulterated. The preparation is called pressed coffee grains.

I will give you an instance to illustrate how these pure food laws work when there is money to enforce them. In November I was in New York. and on my return trip I went to the dining-car on the train one morning to get my breakfast. Sitting opposite me was a pleasant-looking gentleman, with whom I entered into a conversation. My cream was brought to me, and it looked rich and nice, but I discovered something strange in the taste. When I poured some into my coffee a lump of something flopped into it. I fished it out with a fork, dipped it into my glass of water, and then tasted it and found out it was gelatine. The gentleman was interested and asked my name. I then learned that he was Dr. John Hamilton, Secretary of Agriculture of Pennsylvania, and also Food Commissioner for that State. So you see there were two State Food Commissioners there. We took all our data together. Then we called the conductor of the car and asked him about the cream. He said the railroad company bought seven gallons of cream every day from a man at Covington, Ky., and gave us the man's name. He told us that he had for some time suspected that there was something wrong about the cream. I wrote to Dr. J. N. McCormick, of Kentucky, about the matter. They have a Food Commissioner in Kentucky. He was informed of this case and went to Covington and examined the cream and found it loaded with gelatine. The man was fined $80 and costs, in all something like $112.

Now, that is perfectly possible in Indiana, gentlemen. If I were to receive a letter that an Indiana rascal was furnishing stretched cream, what would I do? Nothing. We have no laboratory, and I could not do anything. We must have a laboratory or we can not do anything about it. We could have the laboratory fitted up here in the State House. There are plenty of fine rooms here in the basement. To the laboratory the citizens could send at any time for analysis anything that they suspected, and we could bring prosecutions and punish the offenders. This would soon spread terror among the offenders. It will cost about $5,000 to establish a laboratory, and it will cost about $15,000 to conduct it, which is less than the loss sustained in one day in the State. Michigan gives $18,000 yearly for this work, and Wisconsin gives $15,000 for the enforcement of this law.

Q. Do you know whether they are stretching the commercial flour in this State?

Dr. Hurty: I have not examined it.

Mr. Mitchell: In our mills they have a machine for mixing corn flour in the wheat flour, and they do not do it on the sly either.

Dr. Hurty: They know we can not do anything.

Member: I understand they are making bran out of corncobs.

Dr. Hurty: Are any of you acquainted with the jellies sold in groceries? It is nothing in the world but glucose that has been colored red, and if it is sold for raspberry jelly there are some hay seeds mixed up in it to simulate the berry seeds. Now, I submit that is wrong and wicked. A little different flavoring will make it quince jelly.

Now I shall tell you how the Pure Food Law was gotten up. A Senator came to me and said he was interested in food legislation. He said he had been trying to write a law, but found a great deal of difficulty in doing it. I told him I had been studying the subject for twelve years. We had some drafts made and sent one to Purdue, one to Dr. Walcott, of Massachusetts, and passed finally what the British Health Journal said was probably one of the best to be found anywhere. The benefit of this law is that it gets the State Board of Health to pass laws establishing standards and specifying adulterations. Now, you know standards are changing all the while and new adulterants coming in all the while. If the Board has power to say that gelatine put into cream is an adulteration the law will recognize it. The law has been tested; it has come to the Appellate Court and the Supreme Court, and has been sustained throughout in every particular. The rules of the State Board and everything has been sustained. We are all right as far as law is concerned, and officers all over the State are concerned, but we need a laboratory and money to sustain it before anything can be done. We can not run our locomotive without coal.

The meeting was then adjourned.

THIRD SESSION.

The meeting of the State Board of Agriculture was called to order at 10 a. m., by President McDonald, who announced that elections were to be held for members for the First, Second, Third, Fourth, Seventh, Fourteenth, Fifteenth and Sixteenth Districts.

The report of Committee on Credentials was read.

The following tellers were appointed: W. W. Morgan and H. L. Nowlin.

On motion, Mr. Robert Mitchell was authorized to cast the vote for the State Fair at Evansville.

The report was then adopted.

President McDonald: Gentlemen of the State Board, we have come to the point in our proceedings where it is incumbent upon us to elect eight members of this Board in the First, Second, Third, Fourth, Seventh, Fourteenth, Fifteenth and Sixteenth Districts. I hope that this election will be characterized by fairness. I hope that we shall have here a courteous and friendly contest, and, as far as it is in my power, I will do everything that I possibly can to make this an orderly and gentlemanly contest. I shall hear any suggestion as to the rules of your voting, whether the rules pursued by former meetings of this body shall be followed, or whether you have any new rules to suggest as to the manner of voting.

The following members were placed in nomination for the several districts:

First District: John C. Haines.

Second District: Hon. Mason J. Niblack.

Third District: E. S. Tuell, Corydon, and C. W. Brubeck, Georgetown.

Fourth District: John Tilson, Johnson County, and E. A. Robison, Franklin.

Seventh District: David Wallace, Indianapolis.

Fourteenth District: Cott Barnett, Cass County, and Joseph Cunningham, Miami County.

Fifteenth District: R. M. Small, Laporte; C. B. Benjamin, Lake County, and Aaron Jones, South Bend.

Sixteenth District: James E. McDonald.

In placing Mr. Wallace in nomination Mr. Robison, the retiring member from the Seventh District, said: I would like to say a word in severing my connection with the Board. It is not from any lack of interest or deep-seated love for the work that I do not allow my name to be presented as a candidate for the nomination of member of the State Board. I have been associated with the Board for upwards of seven years, and I have a deep and abiding faith in the members with whom I have been associated. I know that they are working for the best interests of the State, and while their work, to a great extent, is unappreciated by a great many people, nevertheless the work has been done faithfully and well. It has occurred to me that in the minds of the public generally I might not be accepted as a horny-handed son of toil. I was born and reared on a farm. Lately one of our newspapers suggested that Mr. Wallace and I should set about to see who should be the nominee of the Board in a milking contest of about twelve cows each. I would not be afraid to enter that contest, for I milked twelve cows twice a day for ten years.

I feel that every man who has been connected with the State Board learns to have the interests of the Board at heart. I think members representing the diversified interests should be represented on the Board. Mr. Wallace, as you all know, is in the stock business and can bring to the Board the knowledge that he has of the stock interests through all its varying parts, and I heartily second the nomination of Mr. Wallace, believing, as I do, that he will be one of the most efficient members of the Board that this District has ever had if he is selected.

The result of balloting for members was as follows:

In the First and Second Districts, there being only one candidate nominated for each, the Secretary was instructed to cast the ballot for the entire association.

In the Second District, Mr. Brubeck received 29 votes and Mr. Tuell received 38, a total of 67 votes being cast. Mr. Tuell was declared elected.

In the Fourth District, E. A. Robison received 21 votes and John Tilson received 46, a total of 67 votes being cast. Mr. Tilson was declared elected.

In the Seventh District, Mr. Wallace being the only nominee, the Secretary was instructed to cast the vote of the entire association for Mr. Wallace.

In the Fifteenth District, Aaron Jones received 16 votes and C. B. Benjamin received 43, and R. M. Small received 7, a total of 66 votes being cast. Mr. Benjamin was declared elected.

In the Fourteenth District, Cott Barnett received 13 votes, and Joseph Cunningham 52, the total number of votes cast being 65. Mr. Cunningham was declared elected.

In the Sixteenth District, James W. McDonald was placed in nomination, and as there was no other nominee the Secretary was instructed to cast the vote of the entire convention for Mr. McDonald.

Mr. McDonald: I want to thank you for this honor. I am not a farmer, but the farming interests and all other interests of the State of Indiana have my sympathy. The reason I am not a farmer is because my father did not have farms enough to go around, and my father-in-law had none. My father is a farmer, and my sympathies are with the agricultural interests of this State. I shall give my active, conscientious, individual attention to everything connected with this Board.

Mr. Wallace, Indianapolis: I consider it a great honor to be elected a member of the State Board of Agriculture. It is an honorable position and an important one. I represent the live stock interests of my district. I am very frank to say that if Mr. Robison and I had that contest he spoke of, I would have been defeated.

I don't believe the breeders of this State realize how rapidly they are coming to the front as breeders of beef cattle. Yesterday, in Chicago, a Hereford bull was sold for $12,000. He was bred here in Indiana. We have more high-priced cattle, and better, more Shorthorn cattle and better. The Aberdeen-Angus men have organized an association and are to have a meeting today. I want you to give them encouragement.

In conclusion I will assure you that as a member of this Board I shall do all I can to help you during the coming year.

On motion, the report was accepted.

REPORT OF SUPERINTENDENT OF PRIVILEGES.

To the President and Members of the Delegate State Board of Agriculture of Indiana:

Gentlemen—As Superintendent of Privileges for the year 1901, I have to report a most successful year. I believe all shows and concessions of all kinds were conducted in a very satisfactory manner.

I collected and hold receipts of the Secretary for	$4,322 90
Expense of assistants	71 75

This is the largest amount ever collected for privileges at any Indiana State Fair.

If the grounds were re-platted it would save the Superintendent much annoyance in giving people their proper locations, and I should recommend that no concessions be sold immediately adjoining any of the buildings.

This would require that other space be used for some of the machinery and buggy exhibits, but would help the appearance of the buildings and lessen the danger from various sources.

Respectfully submitted,
H. L. NOWLIN,
Superintendent of Privileges.

REPORT OF SUPERINTENDENT OF ART HALL.

Mr. President and Members of the Delegate Board:

As Superintendent of the Art Hall, I began soon after my appointment to see what changes could be made to advantage.

In the Art Hall we changed the booths on the north side, making them larger, and by some papering, more attractive, at the same time giving more space for sale by the Superintendent of Privileges.

In revising the premium list we changed several prize numbers by cutting out and adding a few. Among some that were added was in the China Department, both in amateur and professionals.

"Painting on China Under Instruction" which saved quite a little worry reported in this department by Superintendents.

While perhaps there were not as many exhibitors as at some fairs past, the quality was above the average.

I believe members of the future fairs should look forward to a building of more modern arrangements to display the exhibitors' goods. As much as possible goods should be placed in cases for the different exhibits, better protecting them from being lost and the suffocating dust that naturally arises from large crowds.

In the Painting and Drawing the work was very creditable, but the light is so bad there could not be justice done to all exhibitors.

Expense of Department.

Mr. L. M. Meaken, Judge	$15 00
Mrs. F. D. Abraham, Judge	14 40
Mrs. C. M. Culbertson, Judge	15 80
Mrs. Pearl E. Tyner, Ex. Manager	44 00
Mr. Frank Welch, helper	34 00
Miss Nellie Darnell,	20 50
Mrs. Fannie Schidler, express	18 00
Mrs. M. F. Fox, assistant	20 00
Miss Neva Peed	20 35
Mrs. G. W. McCoy	28 00
Mrs. V. D. Robison	18 60
Mrs. Fannie Inks	24 00

Mrs. F. D. Clapp	$24 00
Herbert Shumer	1 25
Philip Rhodes, night police	15 00
Anna Brown	50
Philip Kendall	50
Chas. Denerly	3 00
Receipts on money paid out	4 50
Total expense	$341 80

J. C. BRIDGES,
Superintendent.

SUPERINTENDENT'S REPORT.

To the President and Members of the Indiana State Board of Agriculture:

At the Indiana State Fair of 1901, in the Horse Department, classes one, two, three and four were well represented. The total entries were ——. The French Draft and Percherons made a good show. The several show rings of Shire stallions were fine and attracted great attention, while the French and German Coach stallions made a splendid exhibition. It was altogether the best field of heavy harness horses seen at our State Fair for a great many years.

The receipts of this department from stall rents were $130. The expenses of same are for Assistant Superintendent.

Geo. McDaniels	.....
Thos. M. Bell, Expert Judge	$50 00

Respectfully submitted,
W. M. BLACKSTOCK,
Superintendent.

The following is a complete list of all awards made at the Indiana State Fair of 1901:

INDIANA STATE FAIR, 1901.

SPEED PROGRAM.

M. S. Claypool, Superintendent.
M. A. McDonald, Starting Judge.

G. W. Hall, G. V. Kell, J. J. Insley,	Judges.

C. R. Worrall, W. W. Morgan, C. H. Anthony,	Timers.

F. A. Wishart, Clerk of Course.

AWARDS.

TUESDAY, SEPTEMBER 17.

2:30 Trot—$500 divided—$225, $100, $50 and $25.

Cretones, b. m	1	3	1	1
Crescent, g. g	8	1	3	3
Dick Berry, b. g	2	2	2	2
Daisy Direct, br. m	3	4	5	4
King's Clerc, s. g	4	8	6	5
Kingsmount, g. g	7	6	7	6
Charley Cecil, b. g	10	7	8	7
John W, b. g	6	5	4	8

TIME.

	¼ Mile.	½ Mile.	¾ Mile.	Mile.
First heat	:33¾	1:08¾	1:34	2:16½
Second heat	:33¾	1:08¼	1:41	2:14¼
Third heat	:33	1:06	1:40½	2:13¼
Fourth heat	:33¼	1:08	1:41	2:14¾

Stake Race No. 1, 2:25 Pace—$2,000 divided—$900, $400, $200, $100.

Dr. Monical	1	1	1
Poston	2	2	2
Possum	3	4	4
Rex S.	5	5	3
Jack Pointer	6	3	5
Ida Van Cortland	4	6	6

TIME.

	¼ Mile.	½ Mile.	¾ Mile.	Mile.
First heat	:33	1:07¾	1:40½	2:14¾
Second heat	:31½	1:04½	1:38¼	2:14
Third heat	:33	1:06	1:38½	2:14

WEDNESDAY, SEPTEMBER 18.

2:25 Pace—$500 divided—$225, $100, $50, $25.

Luzon, b. s.	1	1	1
Ephriam, b. g.	2	2	2
International Queen	4	4	4
Annie T, blk. m	5	5	5

TIME.

	¼ Mile.	½ Mile.	¾ Mile.	Mile.
First heat	:32	1:06½	1:39½	2:13¼
Second heat	:32½	1:07	1:40½	2:14
Third heat	:34	1:08	1:42½	2:17¾

2:10 Trot—$700—$315, $140, $70, $35.

May Allan, s. m.	1	3	2	1	1
Alan, b. g.	2	1	3	2	2
Dorothy Redmond, blk. m.	3	4	1	3	4
J. T.	4	2	4	4	3

TIME.

	¼ Mile.	½ Mile.	¾ Mile.	Mile.
First heat	:32	1:05½	1:38	2:10¾
Second heat	:32	1:06	1:39	2:11¾
Third heat	:32¼	1:05½	1:38	2:10½
Fourth heat	:32¾	1:06	1:39¾	2:12
Fifth heat	:32¾	1:00	1:38¾	2:13

2:17 Pace—$600 divided—$270, $120, $60, $30.

Carelio M., b. m	4	1	2	2	1
Donald Sphinx, br. s	10	6	4	1	2
Roy Day, b. s	1	2	8	8	7
Earl Park, br. g	9	8	1	4	5
Slumber Jr., b. s	2	5	6	5	6
Baron Waltzer, b. g	5	7	10	6	3
Nellie Storm, b. m	7	9	5	3	4

TIME.

	¼ Mile.	½ Mile.	¾ Mile.	Mile.
First heat	:31¼	1:03¾	1:38¾	2:13¼
Second heat	:31¾	1:05¼	1:38¼	2:10¾
Third heat	:33¼	1:05¾	1:38¾	2:12¼
Fourth heat	:32	1:04	1:38	2:10¾
Fifth heat	:32	1:05¼	1:39	2:11

THURSDAY, SEPTEMBER 19.

2:14 Pace—$700 divided—$315, $140, $70, $35.

Col. Dick Thompson, br. g	1	1	1
Tertimin, b. s	2	2	3
Hal Foster	10	8	2
Rube Johnson, br. g	3	7	4
Kitty Powers	8	5	5
High Trust	5	9	6
Daisy Sheldon, s. m	4	6	7
Inline, s. s	11	4	8
Sampson, b. g	9	5	9
Catherine M., ch. m	7	10	10

TIME.

	¼ Mile.	½ Mile.	¾ Mile.	Mile.
First heat	:32	1:04½	1:37	2:10¼
Second heat	:33	1:05¼	1:37¾	2:10¾
Third heat	:32	1:05½	1:37¼	2:11¼

2:25 Trot—$600 divided—$270, $120, $60, $30.

Gavetta, b. m	1	1	1
Jessie C., ch. m	2	2	2
Blackheart, b. m	3	3	4
Billie B., b. g	5	5	3
Helen Wood, s. m	6	4	5
Twilight	4	6	6
Coal Black Lady, blk. m	8	7	7

TIME.

	¼ Mile.	½ Mile.	¾ Mile.	Mile.
First heat	:35	1:09	1:44	2:19¼
Second heat	:35¼	1:02	1:41½	2:15¼
Third heat	:34	1:07	1:39	2:15¼

Free-For-All-Pace—$1,000—divided—$450, $100, $50.

Harry O., b. g	5	1	1	1
Edith W., b. m	1	2	2	2
My Choice	2	5	5	3
Tom Ogden, b. g	3	4	3	4

TIME.

	¼ Mile.	½ Mile.	¾ Mile.	Mile.
First heat	:30¼	1:02½	1:33½	2:06
Second heat	:31¼	1:02½	1:34½	2:06¾
Third heat	:31¾	1:03¾	1:36	2:07¾
Fourth heat	:31	1:04	1:36½	2:07½

FRIDAY, SEPTEMBER 20.

2:15 Trot—$700 dipvided—$315, $140, $70, $35.

Neighbor Girl, b. m	1	5	1	1
A. J. D., br. g	4	1	2	4
Alice Russell, b. m	6	2	3	3
Ebba, g. m	3	3	8	2
Sphinx Lassie, b. m	7	6	4	5
Prosperity Bill, ch. s	5	8	5	6
Yellow Jacket, ch. g	2	4	7	7
Geo. Muscovite	8	7	6	8

TIME.

	¼ Mile.	½ Mile.	¾ Mile.	Mile.
First heat	:33	1:07	1:39	2:12¼
Second heat	:32½	1:06½	1:40¼	2:13¼
Third heat	:34	1:07¼	1:40	2:12¾
Fourth heat	:32½	1:06	1:38¾	2:13

2:21 Pace—$600 divided—$270, $120, $60, $35.

Challie Downing, ch. m	1	1	1
Fantine, b. m	4	2	2
Signal Bells, b. g	2	4	5
Poston, b. s	6	3	3
Muncie Bells, b. g	7	6	6
Grace M., r. m	9	8	4
Tenny S., b. m	5	5	7
Rayview, b. s	3	7	8
International Stock Food, b. g	8	9	9

TIME.

	¼ Mile.	½ Mile.	¾ Mile.	Mile.
First heat	:32¼	1:04	1:37¼	2:11¼
Second heat	:33	1:06½	1:39¾	2:12½
Third heat	:33¼	1:07¼	1:40	2:12¼

2:09 Pace—$700 divided—$315, $140, $70, $35.

Ine, br. m	1	2	1	2	3
Chestnut, s. g	5	3	2	1	1
Fred the Kid, b. s	2	1	3	5	2
C. F. W., b. s	8	8	7	3	5
The Hero, br. s	10	10	8	9	4
Milton, S., b. s	3	6	9	7	6
Grace B.	11	11	11	12	7
Split Silk, ch. m	7	12	12	10	8

TIME.

	¼ Mile.	½ Mile.	¾ Mile.	Mile.
First heat	:32½	1:05	1:36½	2:08¼
Second heat	:31¾	1:03½	1:36	2:08¼
Third heat	31½	1:04½	1:36¼	2:09
Fourth heat	:31¾	1:04½	1:36½	2:09½
Fifth heat	:33¾	1:06¼	1:40¼	2:12

CLASS I—French Draft and Percheron Horses.

(G. W. Bell, Judge.)

1. Stallion 4 years old and over—	
(1) Lafayette Importing Co., Lafayette, Ind.	$25 00
(2) Pioneer Stud Farm, Bushnell, Ill.	15 00
(3) Pioneer Stud Farm, Bushnell, Ill.	10 00
2. Stallion 3 years old and under 4—	
(1) J. Crouch & Son, Lafayette, Ind.	15 00
(2) Pioneer Stud Farm, Bushnell, Ill.	10 00
(3) Wm. Axe & Sons, Westchester, Ind.	6 00
3. Stallion 2 years old and under 3—	
(1) Lew W. Cochran, Crawfordsville, Ind.	12 00
(2) Boyle, Otto & Petterson, Magnola, Ill.	8 00
(3) Boyle, Otto & Petterson, Magnola, Ill.	5 00
4. Stallion 1 year old and under 2—	
(1) Lew W. Cochran, Crawfordspville, Ind.	10 00
(2) Boyle, Otto & Petterson, Magnola, Ill.	6 00
(3) Boyle, Otto & Petterson, Magnola, Ill.	4 00
5. Stallion showing four best colts under 4 years old—	
6. Mares and fillies 4 years old and over—	
7. Mares and fillies 3 years old and under 4—	
(1) Lew W. Cochran, Crawfordsville, Ind.	15 00
8. Mares and fillies 2 years old and under 3—	
9. Mares and fillies 1 year old and under 2—	

CLASS II—Clydesdale and English Shire.

(G. W. Bell, Judge.)

10. Stallion 4 years old and over—	
(1) Pioneer Stud Farm, Bushnell, Ill.	$25 00
(2) Pioneer Stud Farm, Bushnell, Ill.	15 00
(3) Pioneer Stud Farm, Bushnell, Ill.	10 00
11. Stallion 3 years old and under 4—	
(1) Geo. E. Brown, Aurora, Ill.	15 00
(2) Thomson & Bland, Crawfordsville, Ind.	10 00
(3) Geo. E. Brown, Aurora, Ill.	6 00
12. Stallion 2 years old and under 3—	
(1) Pioneer Stud Farm, Bushnell, Ill.	12 00
(2) Geo. E. Brown, Aurora, Ill.	8 00
(3) Geo. Sangster, Monticello, Ind.	5 00
13. Stallion 1 year old and under 2—	
(1) Lew W. Cochran, Crawfordsville, Ind.	10 00
(2) Boyle, Otto & Petterson, Magnola, Ill.	6 00
(3) Boyle, Otto & Petterson, Magnola, Ill.	4 00

14. Stallion showing 4 best colts under four years old—	
(1) Lew W. Cochran, Crawfordsville, Ind.	25 00
(2) Geo. Warner, Sr., Mahomet, Ill.	15 00
15. Mares and fillies 4 years old and over—	
(1) Isaac Webb, Rushville, Ind.	25 00
(2) Geo. Warner, Sr., Mahomet, Ill.	15 00
(3) Lewis Bros., Camp Point, Ill.	10 00
16. Mares and fillies 3 years old and under 4—	
(1) Lew W. Cochran, Crawfordsville, Ind.	15 00
(2) W. H. Lagrange & Sons, Franklin, Ind.	10 00
(3) Geo. Warner, Sr., Mahomet, Ill.	6 00
17. Mares and fillies 2 years old and under 3—	
(1) L. B. Clore, Franklin, Ind.	12 00
(2) Geo. Warner, Sr., Mahomet, Ill.	5 00
(3) Geo. Warner, Sr., Mahomet, Ill.	5 00
18. Mares and fillies 1 year old and under 2—	

CLASS III—French and German Coach.

(G. W. Bell, Judge.)

19. Stallion 4 years old and over—	
(1) Lewis Bros., Camp Point, Ill.	$25 00
(2) Lafayette Importing Co., Lafayette, Ind.	15 00
(3) Lewis Bros., Crown Point, Ill.	10 00
20. Stallion 3 years old and under 4—	
(1) Lafayette Importing Co., Lafayette, Ind.	15 00
(2) Lewis Bros., Camp Point, Ill.	10 00
(3) Lafayette Importing Co., Lafayette, Ind.	6 00
21. Stallion 2 years old and under 3—	
(1) Lewis Bros., Camp Point, Ill.	12 00
22. Stallion 1 year old and under 2—	
(1) Lewis Bros., Camp Point, Ill.	10 00
23. Stallion showing 4 best colts under 4 years old—	
24. Mares and fillies 4 years old and over—	
(1) Lewis Bros., Camp Point, Ill.	25 00
25. Mares and fillies 3 years old and under 4—	
(1) Lafayette Importing Co., Lafayette, Ind.	15 00
26. Mares and fillies 2 years old and under 3—	
27. Mares and fillies 1 year old and under 2—	

CLASS IV—Cleveland Bay, Hackney and American Coach.

(G. W. Bell, Judge.)

28. Stallion 4 years old and over—	
(1) Pioneer Stud Farm, Bushnell, Ill.	$25 00
(2) Lew W. Cochran, Crawfordsville, Ind.	15 00
(3) J. Crouch & Son, Lafayette, Ind.	10 00
29. Stallion 3 years old and under 4—	
(1) Lew W. Cochran, Crawfordsville, Ind.	15 00
(2) Geo. Sangster, Monticello, Ind.	10 00
(3) Lew W. Cochran, Crawfordsville, Ind.	6 00
30. Stallion 2 years old and under 3—	
(1) Lew W. Cochran, Crawfordsville, Ind.	12 00
(2) Lew W. Cochran, Crawfordsville, Ind.	8 00
(3) John V. Connolly, Madison, Ind.	5 00
31. Stallion 1 year old and under 2—	
(1) Lew W. Cochran, Crawfordsville, Ind.	10 00
(2) A. C. Turner, Oxford, O.	6 00
32. Mares and fillies 4 years old and over—	
(1) Thompson & Bland, Crawfordsville, Ind.	25 00
(2) Thompson & Bland, Crawfordsville, Ind.	15 00
(3) J. R. Peak & Son, Winchester, Ill.	10 00
33. Mares and fillies 3 years old and under 4—	
(1) J. R. Peak & Son, Winchester, Ill.	15 00
(2) J. R. Sanford, Whitestown, Ind.	10 00
(3) Thos. Teal & Son, Attica, Iowa	6 00
34. Mares and fillies 2 years old and under 3—	
(1) J. R. Peak & Son, Winchester, Ill.	12 00
(2) A. C. Turner, Oxford, O.	8 00
35. Mares and fillies 1 year old and under 2—	
(1) J. R. Peak & Son, Winchester, Ill.	10 00

CLASS V—Light Harness Horses.

(G. W. Bell, Judge.)

36. Stallion 4 years old and over—	
(1) S. J. Fleming, Terre Haute, Ind.	$25 00
(2) A. C. Turner, Oxford, Ohio	15 00
(3) W. A. Jones, Rushville, Ind.	10 00
37. Stallion 3 years old and under 4—	
(1) M. H. Reardon, Indianapolis, Ind.	15 00
(2) A. C. Turner, Oxford, Ohio	10 00

38.	Stallion 2 years old and under 3—	
	(1) J. H. Parkhurst & Co., Indianapolis, Ind.	12 00
	(2) J. R. Peak & Son, Winchester, Ill.	8 00
	(3) John V. Connoly, Madison, Ind.	5 00
39.	Stallion 1 year old and under 2—	
	(1) Will Dagler, Rushville, Ind.	10 00
	(2) F. M. Rotler, Indianapolis, Ind.	6 00
	(3) A. C. Turner, Oxford, Ohio	4 00
40.	Stallion showing 4 best colts under 4 years old—	
	(1) J. R. Peak & Son, Winchester, Ill.	25 00
	(2) A. C. Turner, Oxford, Ohio	15 00

MARES AND FILLIES.

41.	Four years old and over—	
	(1) Thompson & Bland, Crawfordsville, Ind.	25 00
	(2) J. R. Peak & Son, Winchester, Ill.	15 00
	(3) M. H. Reardon, Indianapolis, Ind.	10 00
42.	Three years old and under 4—	
	(1) J. R. Peak & Son, Winchester, Ill.	15 00
	(2) Will Dagler, Rushville, Ind.	10 00
	(3) A. C. Turner, Oxford, Ohio	6 00
43.	Two years old and under 3—	
	(1) Will Dagler, Rushville, Ind.	12 00
	(2) Will Dagler, Rushville, Ind.	8 00
	(3) Frank L. Clark, Indianapolis, Ind.	5 00
44.	One year old and under 2—	
	(1) Will Dagler, Rushville, Ind.	10 00
	(2) Will Dagler, Rushville, Ind.	6 00
	(3) A. C. Turner, Oxford, Ohio	4 00
45.	Mare and two of her progeny 3 years old or under—	
	(1) Will Dagler, Rushville, Ind.	25 00
	(2) Will Dagler, Rushville, Ind.	15 00

GELDINGS.

46.	Four years old and over—	
	(1) Thompson & Bland, Crawfordsville, Ind.	25 00
	(2) F. M. Rotler, Indianapolis, Ind.	15 00
	(3) W. D. Griffith, Crawfordsville, Ind.	10 00
47.	Three years old and under 4—	
	(1) W. A. Jones, Rushville, Ind.	15 00
48.	Two years old and under 3—	
	(1) A. C. Turner, Oxford, Ohio	12 00

CLASS VI.—Coach and Carriage Pair, Roadsters and Saddlers.

(G. W. Bell, Judge.)

49.	Coach or carriage pair—	
	(1) M. H. Reardon, Indianapolis, Ind	$30 00
	(2) J. Crouch & Son, Lafayette, Ind	20 00
	(3) Dr. Q. Van Hummel, Indianapolis, Ind	10 00
50.	Single roadster (mare)—	
	(1) J. R. Peak & Son, Winchester, Ill	30 00
	(2) M. H. Reardon, Indianapolis, Ind	20 00
	(3) Thompson & Bland, Crawfordsville, Ind	10 00
51.	Single roadster (gelding)—	
	(1) F. M. Rotler, Indianapolis, Ind	30 00
	(2) W. D. Griffith, Crawfordsville, Ind	20 00
	(3) Thompson & Bland, Crawfordsville, Ind	10 00
52.	Double roadster—	
	(1) M. H. Reardon, Indianapolis, Ind	30 00
	(2) W. A. Jones, Rushville, Ind	20 00
	(3) J. R. Peak & Son, Winchester, Ill	10 00
53.	Saddle stallion—	
	(1) John V. Connoly, Madison, Ind	30 00
54.	Saddle mare—	
	(1) John V. Connoly, Madison, Ind	30 00
	(2) John V. Connoly, Madison, Ind	10 00
55.	Saddle gelding—	
	(1) John V. Connoly, Madison, Ind	30 00
	(2) S. J. Fleming, Terre Haute, Ind	20 00
	(3) John V. Connoly, Madison, Ind	10 00
56.	Best saddle stallion, mare or gelding—	
	(1) John V. Connoly, Madison, Ind	50 00

CLASS VII—Ponies (all breeds).

(G. W. Bell, Judge.)

57.	Pony 11 hands or under, in single harness—	
	(1) Russel Brouse, Indianapolis, Ind	$10 00
	(2) Pat Johnson, Indianapolis, Ind	5 00
58.	Pony 11 to 13 hands, in single harness—	
	(1) Wm. B. Blair, Indianapolis, Ind	10 00
	(2) Lafayette Importing Co., Lafayette, Ind	5 00
59.	Pony 13 to 14½ hands, in single harness—	
	(1) Lew W. Cochran, Crawfordsville, Ind	10 00

60. Mare and colt—	
61. Pair ponies 11 to 13 hands, in harness—	
(1) Mrs. K. Pence, Indianapolis, Ind.	10 00
(2) Peter Smith & Son, Indianapolis, Ind.	5 00
62. Pair ponies 13 to 14½ hands, in harness—	
(1) Lew W. Cochran, Crawfordsville, Ind.	10 00
63. Ponies, tandem—	
(1) Lew W. Cochran, Crawfordsville, Ind.	10 00
(2) Mrs. K. Pence, Indianapolis, Ind.	5 00

CLASS VIII—Equipages.

65. Two horses, two-seated equipage—	
(1) M. H. Reardon, Indianapolis, Ind.	$20 00
(2) Thompson & Bland, Crawfordsville, Ind.	15 00
(3) J. R. Peak & Son, Winchester, Ill.	10 00
66. One horse, one-seated equipage, for lady—	
(1) R. W. Sandford, Whitestown, Ind.	15 00
(2) Mrs. Jos. Thorne, Indianapolis, Ind.	12 00
(3) M. H. Reardon, Indianapolis, Ind.	7 00
67. Vehicle for children—	
(1) Lew W. Cochran, Crawfordsville, Ind.	15 00
(2) Lafayette Importing Co., Lafayette, Ind.	12 00
(3) Chester Baker, Indianapolis, Ind.	7 00

CLASS IX—Cattle (Beef Breeds).

SHORTHORNS.

(Robt. Mitchell, Princeton, Judge.)

68. Bulls 3 years old and over—	
(1) J. G. Robbins & Sons, Horace, Ind.	$25 00
(2) J. O. Stout, Hollandsburg, Ind.	15 00
(3) E. W. Bowen, Delphi, Ind.	5 00
69. Bulls 2 years old and under 3—	
(1) Baird Bros., Wallen, Ind.	20 00
(2) E. E. Souers, Warren, Ind.	10 00
70. Bulls 1 year old and under 2—	
(1) J. O. Stout, Hollandsburg, Ind.	15 00
(2) Smith & Crane, Ashley, Ind.	6 00
(3) J. G. Robbins & Sons, Horace, Ind.	3 00
71. Calf under 1 year—	
(1) E. C. Thompson, Irvington, Ind.	8 00
(2) Geo. Harding & Sons, Waukesha, Wis.	3 00
(3) J. G. Robbins & Sons, Horace, Ind.	2 00

72. Cows and heifers 3 years old and over—	
(1) J. G. Robbins & Sons, Horace, Ind	25 00
(2) Geo. Harding & Sons, Waukesha, Wis	15 00
(3) E. W. Bowen, Delphi, Ind	5 00
73. Cows and heifers 2 years old and under 3—	
(1) J. G. Robbins & Sons, Horace, Ind	20 00
(2) J. O. Stout, Hollandsburg, Ind	10 00
(3) E. W. Bowen, Delphi, Ind	4 00
74. Cows and heifers 1 year old and under 2—	
(1) Geo. Harding & Sons, Waukesha, Wis	15 00
(2) Frank W. Cotton, Manilla, Ind	6 00
(3) J. G. Robbins & Sons, Horace, Ind	3 00
75. Calf under 1 year—	
(1) J. G. Robbins & Sons, Horace, Ind	8 00
(2) J. G. Robbins & Sons, Horace, Ind	3 00
(3) George Harding & Sons, Waukesha, Wis	2 00
76. Four animals, either sex, the get of one sire—	
(1) J. G. Robbins & Sons, Horace, Ind	20 00
(2) J. O. Stout, Hollandsburg, Ind	10 00
(3) Geo. Harding & Sons, Waukesha, Wis	4 00
77. Two animals, either sex, the produce of one cow—	
(1) Geo. Harding & Sons, Waukesha, Wis	20 00
(2) J. O. Stout, Hollandsburg, Ind	10 00
(3) Smith & Crane, Ashley, Ind	4 00
78. Exhibitor's herd: One bull two years old or over, one cow three years old or over, one heifer two years old and under three, one heifer one year old and under two, and one heifer calf—	
(1) J. G. Robbins & Sons, Horace, Ind	50 00
(2) Geo. Harding & Sons, Horace, Ind	25 00
79. Breeder's herd: One bull under two years old, two heifers one year old and under two, and two heifer calves, all except the bull to be bred by the exhibitor—	
(1) J. G. Robbins & Sons, Horace, Ind	50 00
(2) W. F. Christian & Sons, Indianapolis, Ind	25 00

SWEEPSTAKES.

80. Best bull, any age—	
(1) J. G. Robbins & Sons, Horace, Ind	25 00
81. Best cow or heifer, any age—	
(1) J. G. Robbins & Sons, Horace, Ind	25 00

CLASS X—Special Class for Indiana Shorthorns.

(F. W. Harding, Judge.)

82.	Bull 18 months and under 24—	
	(1) Smith & Crane, Ashley, Ind.	$25 00
83.	Bull 12 months and under 18—	
	(1) J. G. Robbins & Sons, Horace, Ind.	25 00
	(2) J. W. Williams & Sons, Briant, Ind.	20 00
	(3) J. D. Douglass & Sons, Hope, Ind.	15 00
84.	Bull 6 months old and under 12—	
	(1) J. D. Douglass & Sons, Hope, Ind.	25 00
	(2) R. Leavitt & Sons, Vernon, Ind.	20 00
	(3) S. R. Quick & Son, Brooklyn, Ind.	15 00
85.	Bull under 6 months—	
	(1) J. G. Robbins & Sons, Horace, Ind.	25 00
	(2) S. R. Quick & Son, Brooklyn, Ind.	20 00
86.	Heifers 18 months and under 24—	
87.	Heifers 12 months and under 18—	
	(1) W. F. Christian & Sons, Indianapolis, Ind.	25 00
	(2) Frank W. Cotton, Manilla, Ind.	20 00
	(3) W. F. Christian & Sons, Indianapolis, Ind.	15 00
88.	Heifers 6 months and under 12—	
	(1) E. C. Thompson, Irvington, Ind.	25 00
	(2) Smith & Crane, Ashley, Ind.	20 00
	(3) J. G. Robbins & Sons, Horace, Ind.	15 00
89.	Heifers under 6 months—	
	(1) J. G. Robbins & Sons, Horace, Ind.	25 00

CLASS XI. Polled Durhams.

(Robt. Mitchell, Princeton, Judge.)

90.	Bulls 3 years old and over—	
91.	Bulls 2 years old and under 3—	
	(1) Fletcher Hines, Malott Park, Ind.	$16 00
92.	Bulls 1 year old and under 2—	
	(1) Fletcher Hines, Malott Park, Ind.	16 00
93.	Calf under 1 year—	
	(1) S. R. Quick & Son, Brooklyn, Ind.	16 00
	(2) S. R. Quick & Son, Brooklyn, Ind.	12 00
	(3) S. R. Quick & Son, Brooklyn, Ind.	8 00
94.	Cows and heifers 3 years old and over—	
	(1) Fletcher S. Hines, Malott Park, Ind.	16 00

95. Cows and heifers 2 years old and under 3—	
(1) Fletcher S. Hines, Malott Park, Ind.	16 00
(2) Fletcher S. Hines, Malott Park, Ind.	12 00
96. Cows and heifers 1 year old and under 2—	
(1) Fletcher S. Hines, Malott Park, Ind.	16 00
(2) Fletcher S. Hines, Malott Park, Ind.	12 00
(3) Fletcher S. Hines, Malott Park, Ind.	8 00
97. Cows and heifers, calf under 1 year—	
(1) Fletcher S. Hines, Malott Park, Ind.	16 00
(2) Fletcher S. Hines, Malott Park, Ind.	12 00
(3) Fletcher S. Hines, Malott Park, Ind.	8 00
98. Exhibitor's herd: One bull 3 years old or over, one cow or heifer 2 years old or over, one heifer 1 year old and under 2, and one heifer under 1 year—	
(1) Fletcher S. Hines, Malott Park, Ind.	16 00
99. Breeder's herd: One bull under 2 years old, two heifers 1 year old and under 2, and two heifers under 1 year—	
(1) S. R. Quick & Son, Brooklyn, Ind.	16 00

CLASS XII—Herefords.

(Robt. Mitchell, Princeton, Judge.)

100. Bulls 3 years old and over—	
(1) Harness & Kirby, Galveston, Ind.	$15 00
101. Bulls 2 years old and under 3—	
(1) Harness & Kirby, Galveston, Ind.	10 00
(2) J. N. Shirley, Lebanon, Ind.	7 00
102. Bulls 1 year old and under 2—	
(1) Harness & Kirby, Galveston, Ind.	8 00
(2) H. F. Schnelker, New Haven, Ind.	6 00
(3) H. F. Schnelker, New Haven, Ind.	3 00
103. Calf under 1 year old—	
(1) Harness & Kirby, Galveston, Ind.	5 00
(2) Harness & Kirby, Galveston, Ind.	3 00
(3) J. N. Shirly, Lebanon, Ind.	2 00
104. Cows and heifers 3 years old and over—	
(1) Harness & Kirby, Galveston, Ind.	15 00
(2) H. F. Schnelker, New Haven, Ind.	10 00
(3) Harness & Kirby, Galveston, Ind.	5 00
105. Cows and heifers 2 years old and under 3—	
(1) Harness & Kirby, Galveston, Ind.	10 00
(2) Harness & Fletcher, Galveston, Ind.	7 00
(3) H. F. Schnelker, New Haven, Ind.	4 00

106. Cows and heifers 1 year old and under 2—	
(1) H. F. Schnelker, New Haven, Ind.	8 00
(2) Harness & Kirby, Galveston, Ind.	6 00
(3) J. N. Shirley, Lebanon, Ind.	3 00
107. Calf under 1 year old—	
(1) H. F. Schnelker, New Haven, Ind.	5 00
(2) Harness & Kirby, Galveston, Ind.	3 00
(3) H. F. Schnelker, New Haven, Ind.	2 00
108. Four animals, either sex, the get of one sire—	
(1) H. F. Schnelker, New Haven, Ind.	10 00
(2) Harness & Kirby, Galveston, Ind.	7 00
109. Two animals, either sex, the produce of one cow—	
(1) Harness & Kirby, Galveston, Ind.	10 00
(2) Harness & Kirby, Galveston, Ind.	7 00
110. Exhibitor's herd: One bull 2 years old or over, one cow 3 years old or over, one heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer calf—	
(1) Harness & Kirby, Galveston, Ind.	20 00
(2) Harness & Kirby, Galveston, Ind.	10 00
111. Breeder's herd: One bull under 2 years old, two heifers 1 year old and under 2, and two heifer calves, all except the bull to be bred by the exhibitor—	
(1) Harness & Kirby, Galveston, Ind.	20 00

SWEEPSTAKES.

112. Best bull, any age—	
(1) Harness & Kirby, Galveston, Ind.	25 00
113. Best cow or heifer, any age—	
(1) Harness & Kirby, Galveston, Ind.	20 00

CLASS XIII—Aberdeen-Angus.

(T. C. Phelps, Judge.)

BULLS.

114. Three years old and over—	
(1) A. C. Binnie, Alta, Iowa	$15 00
(2) A. W. McHenry, Denison, Iowa	10 00
(3) D. Bradfute & Son, Cedarville, Ohio	5 00
115. Two years old and under three—	
(1) C. H. Gardner, Blandersville, Ill.	10 00
116. One year old and under two—	
(1) A. C. Binnie, Alta, Iowa	8 00
(2) A. W. McHenry, Denison, Iowa	6 00
(3) C. H. Gardner, Blandersville, Ill.	3 00

117. Calf under one year old—	
(1) A. W. McHenry, Denison, Iowa	5 00
(2) A. C. Binnie, Alta, Iowa	3 00
(3) D. Bradfute & Son, Cedarville, Ohio	2 00

COWS AND HEIFERS.

118. Three years old and over—	
(1) A. W. McHenry, Denison, Iowa	15 00
(2) C. H. Gardner, Blandersville, Ill	10 00
(3) A. C. Binnie, Alta, Iowa	5 00
119. Two years old and under three—	
(1) A. W. McHenry, Denison, Iowa	10 00
(2) D. Bradfute & Son, Cedarville, Ohio	7 00
(3) A. C. Binnie, Alta, Iowa	4 00
120. One year old and under two—	
(1) A. W. McHenry, Denison, Iowa	8 00
(2) A. W. McHenry, Denison, Iowa	6 00
(3) A. C. Binnie, Alta, Iowa	3 00
121. Calf, under one year old—	
(1) A. W. McHenry, Denison, Iowa	5 00
(2) C. H. Gardner, Blandersville, Ill	3 00
(3) A. C. Binnie, Alta, Iowa	2 00
122. Four animals, either sex, the get of one sire—	
(1) A. W. McHenry, Denison, Iowa	10 00
(2) D. Bradfute & Son, Cedarville, Ohio	7 00
(3) A. C. Binnie, Alta, Iowa	5 00
123. Two animals, either sex, the produce of one cow—	
(1) C. H. Gardner, Blandersville, Ill	10 00
(2) A. W. McHenry, Denison, Iowa	7 00
(3) D. Bradfute & Son, Cedarville, Ohio	5 00
124. Exhibitor's herd—	
(1) A. W. McHenry, Denison, Iowa	20 00
(2) A. C. Binnie, Alta, Iowa	10 00
125. Breeder's herd—	
(1) A. W. McHenry, Denison, Iowa	20 00
(2) D. Bradfute & Son, Cedarville, Ohio	10 00

SWEEPSTAKES.

126. Best bull, any age—	
(1) C. H. Gardner, Blandersville, Ill	20 00
127. Best cow or heifer, any age—	
(1) A. W. McHenry, Denison, Iowa	20 00

CLASS XIV—Galloways.

(T. C. Phelps, Judge.)

BULLS.

136. Three years old and over—	
(1) E. H. White, Estherville, Iowa	$15 00
(2) Brookside Farm Co., Ft. Wayne, Ind	10 00
(3) James Frantz, Bluffton, Ind	5 00
137. Two years old and under three—	
(1) E. H. White, Estherville, Iowa	10 00
(2) Brookside Farm Co., Ft. Wayne, Ind	7 00
(3) E. H. White, Estherville, Iowa	4 00
138. One year old and under two—	
(1) James Frantz, Bluffton, Ind	8 00
(2) E. H. White, Estherville, Iowa	6 00
(3) E. H. White, Estherville, Iowa	3 00
139. Calf, under 1 year old—	
(1) Brookside Farm Co., Ft. Wayne, Ind	5 00
(2) E. H. White, Estherville, Iowa	3 00
(3) Brookside Farm Co., Ft. Wayne, Ind	2 00

COWS AND HEIFERS.

140. Three years old and over—	
(1) James Frantz, Bluffton, Ind	15 00
(2) E. H. White, Estherville, Iowa	10 00
(3) Brookside Farm Co., Ft. Wayne, Ind	5 00
141. Two years old and under three—	
(1) E. H. White, Estherville, Iowa	10 00
(2) Brookside Farm Co., Ft. Wayne, Ind	7 00
(3) James Frantz, Bluffton, Ind	4 00
142. One year old and under two—	
(1) E. H. White, Estherville, Iowa	8 00
(2) E. H. White, Estherville, Iowa	6 00
(3) Brookside Farm Co., Ft. Wayne, Ind	3 00
143. Calf, under one year old—	
(1) Brookside Farm Co., Ft. Wayne, Ind	5 00
(2) Brookside Farm Co., Ft. Wayne, Ind	3 00
(3) E. H. White, Estherville, Iowa	2 00
144.—Four animals, either sex, the get of one sire—	
(1) E. H. White, Estherville, Iowa	10 00
(2) Brookside Farm Co., Ft. Wayne, Ind	7 00
(3) James Frantz, Bluffton, Ind	4 00

145.	Two animals, either sex, the produce of one cow—	
	(1) E. H. White, Estherville, Iowa	10 00
	(2) Brookside Farm Co., Ft. Wayne, Ind	7 00
	(3) E. H. White, Estherville, Iowa	4 00
146.	Exhibitor's herd—	
	(1) E. H. White, Estherville, Iowa	20 00
	(2) Brookside Farm Co., Ft. Wayne, Ind	10 00
147.	Breeder's herd—	
	(1) E. H. White, Estherville, Iowa	20 00
	(2) Brookside Farm Co., Ft. Wayne, Ind	10 00

SWEEPSTAKES.

148.	Best bull, any age—	
	(1) E. H. White, Estherville, Iowa	20 00
149.	Best cow or heifer, any age—	
	(1) E. H. White, Estherville, Iowa	20 00

CLASS XV—Red Polls.

(T. C. Phelps, Judge.)

BULLS.

150.	Three years old and over—	
151.	Two years old and under 3—	
	(1) J. H. Crowder & Son, Bethany, Ill	$7 00
152.	One year old and under 2—	
	(1) J. H. Crowder & Son, Bethany, Ill	5 00
153.	Calf under 1 year old—	
	(1) J. H. Crowder & Son, Bethany, Ill	5 00
	(2) J. H. Crowder & Son, Bethany, Ill	3 00

COWS AND HEIFERS.

154.	Three years old and over—	
	(1) J. H. Crowder & Son, Bethany, Ill	10 00
	(2) J. H. Crowder & Son, Bethany, Ill	5 00
155.	Two years old and under 3—	
	(1) J. H. Crowder & Son, Bethany, Ill	7 00
156.	One year old and under 2—	
	(1) J. H. Crowder & Son, Bethany, Ill	5 00
	(2) J. H. Crowder & Son, Bethany, Ill	3 00
157.	Calf under 1 year old—	
	(1) J. H. Crowder & Son, Bethany, Ill	5 00
	(2) J. H. Crowder & Son, Bethany, Ill	3 00

158.	Four animals, either sex, the get of one sire—	
	(1) J. H. Crowder & Son, Bethany, Ill.	8 00
	(2) J. H. Crowder & Son, Bethany, Ill.	4 00
160.	Exhibitor's herd—	
	(1) J. H. Crowder & Son, Bethany, Ill.	10 00
161.	Breeder's herd—	
	(1) J. H. Crowder & Son, Bethany, Ill.	10 00

SWEEPSTAKES.

162.	Best bull, any age—	
	(1) J. H. Crowder & Son, Bethany, Ill.	10 00
163.	Best cow or heifer, any age—	
	(1) J. H. Crowder & Son, Bethany, Ill.	10 00

CLASS XVI—Open to all Beef Breeds.

(T. C. Phelps and Robt. Mitchell, Judges.)

GRAND SWEEPSTAKES.

164.	Best bull, any age or breed—	
	(1) J. G. Robbins & Sons, Horace, Ind.	$50 00
165.	Best cow or heifer, any age or breed—	
	(1) A. W. McHenry, Denison, Iowa	50 00

CLASS XVII—Cattle (Dairy Breeds).

(W. J. Wright, New Castle, Ind., Judge.)

JERSEYS.

166.	Bull 3 years old and over—	
	(1) J. E. Robbins, Greensburg, Ind.	$20 00
167.	Bull 2 years old and under 3—	
	(1) J. E. Robbins, Greensburg, Ind.	15 00
168.	Bull 1 year old and under 2—	
	(1) J. E. Robbins, Greensburg, Ind.	10 00
	(2) J. E. Robbins, Greensburg, Ind.	7 00
169.	Calf under 1 year old—	
	(1) J. E. Robbins, Greensburg, Ind.	7 00
	(2) D. F. Lee, Zionsville, Ind.	5 00
170.	Cows and heifers 3 years old and over—	
	(1) J. E. Robbins, Greensburg, Ind.	20 00
	(2) J. E. Robbins, Greensburg, Ind.	12 00
171.	Cows and heifers 2 years old and under 3—	
	(1) J. E. Robbins, Greensburg, Ind.	15 00

172. Cows and heifers 1 year old and under 2—	
(1) J. E. Robbins, Greensburg, Ind.	10 00
(2) J. E. Robbins, Greensburg, Ind.	7 00
173. Calf under 1 year old—	
(1) J. E. Robbins, Greensburg, Ind.	7 00
(2) D. F. Lee, Zionsville, Ind.	5 00
174. Four animals, either sex, the get of one sire—	
(1) J. E. Robbins, Greensburg, Ind.	15 00
175. Two animals, either sex, the produce of one cow—	
(1) J. E. Robbins, Greensburg, Ind.	15 00
176. Exhibitor's herd: One bull 2 years old or over, one cow 3 years old or over, one heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer calf—	
(1) J. E. Robbins, Greensburg, Ind.	25 00
177. Breeder's herd: One bull under 2 years old, two heifers 1 year old and under 2, and two heifer calves, all except the bull to be bred by the exhibitor—	
(1) J. E. Robbins, Greensburg, Ind.	25 00

SWEEPSTAKES.

178. Best bull, any age—	
(1) J. E. Robbins, Greensburg, Ind.	25 00
179. Best cow or heifer, any age—	
(1) J. E. Robbins, Greensburg, Ind.	25 00

CLASS XVIII—Holstein-Friesian.

(W. J. Wright, New Castle, Ind., Judge.)

180. Bull 3 years old and over—	
(1) W. R. Barney & Co., Hampton, Ia.	$12 00
181. Bull 2 years old and under 3—	
182. Bull 1 year old and under 2—	
(1) W. R. Barney & Co., Hampton, Ia.	6 00
183. Calf under 1 year old—	
(1) W. R. Barney & Co., Hampton, Ia.	5 00
(2) W. R. Barney & Co., Hampton, Ia.	3 00
184. Cows and heifers 3 years old and over—	
(1) W. R. Barney & Co., Hampton, Ia.	12 00
(2) W. R. Barney & Co., Hampton, Ia.	8 00
(3) W. R. Barney & Co., Hampton, Ia.	4 00
185. Cows and heifers 2 years old and under 3—	
(1) W. R. Barney & Co., Hampton, Ia.	8 00
(2) W. R. Barney & Co., Hampton, Ia.	6 00

186. Cows and heifers 1 year old and under 2—	
(1) W. R. Barney & Co., Hampton, Ia	6 00
(2) W. R. Barney & Co., Hampton, Ia	3 00
187. Calf under 1 year old—	
(1) W. R. Barney & Co., Hampton, Ia	5 00
(2) W. R. Barney & Co., Hampton, Ia	3 00
(3) W. R. Barney & Co., Hampton, Ia	2 00
188. Four animals, either sex, the get of one sire—	
(1) W. R. Barney & Co., Hampton, Ia	8 00
(2) W. R. Barney & Co., Hampton, Ia	6 00
189. Two animals, either sex, the produce of one cow—	
(1) W. R. Barney & Co., Hampton, Ia	8 00
(2) W. R. Barney & Co., Hampton, Ia	6 00
190. Exhibitor's herd: One bull 2 years old or over, one cow 3 years old or over, one heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer calf—	
(1) W. R. Barney & Co., Hampton, Ia	15 00
191. Breeder's herd: One bull under 2 years old, two heifers 1 year old and under 2, and two heifer calves, all except the bull to be bred by the exhibitor—	
(1) W. R. Barney & Co., Hampton, Ia	15 00

SWEEPSTAKES.

192. Best bull, any age—	
(1) W. R. Barney & Co., Hampton, Ia	20 00
193. Best cow or heifer, any age—	
(1) W. R. Barney & Co., Hampton, Ia	20 00

CLASS XIX—Dutch Belted.

194. Bull 3 years old and over—
195. Bull 2 years old and under 3—
196. Bull 1 year old and under 2—
197. Calf 1 year old—
198. Cows and heifers 3 years old and over—
199. Cows and heifers 2 years old and under 3—
200. Cows and heifers 1 year old and under 2—
201. Calf under 1 year old—
202. Four animals, either sex, the get of one sire—
203. Two animals, either sex, the produce of one cow—
204. Exhibitor's herd: One bull 2 years old or over, one cow 3 years old or over, one heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer calf—
205. Breeder's herd: One bull under 2 years old, two heifers 1 year old and under 2, and two heifer calves, all except the bull to be bred by the exhibitor—

CLASS XX—Ayrshires.

(W. J. Wright, New Castle, Ind., Judge.)

206.	Bulls 3 years old and over—	
	(1) M. H. Reardon, City	$12 00
	(2) Howard Cook, Beloit, Ohio	8 00
207.	Bull 2 years old and under 3—	
	(1) Howard Cook, Beloit, Ohio	8 00
	(2) McCormick & Edgerly, Pataskla, Ohio	6 00
208.	Bull 1 year old and under 2—	
	(1) Howard Cook, Beloit, Ohio	6 00
209.	Calf under 1 year old—	
	(1) Howard Cook, Beloit, Ohio	5 00
	(2) McCormick & Edgerly, Pataskla, Ohio	3 00
	(3) Howard Cook, Beloit, Ohio	2 00
210.	Cows and heifers 3 years old and over—	
	(1) Howard Cook, Beloit, Ohio	12 00
	(2) McCormick & Edgerly, Pataskla, Ohio	8 00
	(3) Howard Cook, Beloit, Ohio	4 00
211.	Cows and heifers 2 years old and under 3—	
	(1) McCormick & Edgerly, Pataskla, Ohio	8 00
	(2) Howard Cook, Beloit, Ohio	6 00
	(3) Howard Cook, Beloit, Ohio	3 00
212.	Cows and heifers 1 year old and under 2—	
	(1) Howard Cook, Beloit, Ohio	6 00
	(2) McCormick & Edgerly, Pataskla, Ohio	3 00
	(3) Howard Cook, Beloit, Ohio	2 00
213.	Calf under 1 year old—	
	(1) Howard Cook, Beloit, Ohio	5 00
	(2) McCormick & Edgerly, Pataskla, Ohio	3 00
	(3) Howard Cook, Beloit, Ohio	2 00
214.	Four animals, either sex, the get of one sire—	
	(1) Howard Cook, Beloit, Ohio	8 00
	(2) Howard Cook, Beloit, Ohio	6 00
215.	Two animals, either sex, the produce of one cow—	
	(1) Howard Cook, Beloit, Ohio	8 00
	(2) Howard Cook, Beloit, Ohio	6 00
216.	Exhibitor's herd: One bull 2 years old or over, one cow 3 years old or over, one heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer calf—	
	(1) Howard Cook, Beloit, Ohio	15 00
	(2) McCormick & Edgerly, Pataskla, Ohio	10 00
217.	Breeder's herd: One bull under 2 years old, two heifers 1 year old and under 2, and two heifer calves, all except the bull to be bred by the exhibitor—	
	(1) Howard Cook, Beloit, Ohio	15 00

CLASS XXI—Guernseys.

(W. J. Wright, New Castle, Ind., Judge.)

218. Bull 3 years old and over—	
(1) L. V. Axtell, Perry, O.	$12 00
(2) McCormick & Edgerly, Pataskla, O.	8 00
(3) L. V. Axtell, Perry, O.	4 00
219. Bull 2 years old and under 3—	
(1) McCormick & Edgerly, Pataskia, O.	8 00
(2) L. V. Axtell, Perry, O.	6 00
220. Bull 1 year old and under 2—	
(1) L. V. Axtell, Perry, O.	6 00
(2) McCormick & Edgerly, Pataskla, O.	3 00
(3) L. V. Axtell, Perry, O.	2 00
221. Calf under 1 year old—	
(1) L. V. Axtell, Perry, O.	5 00
(2) L. V. Axtell, Perry, O.	3 00
(3) McCormick & Edgerly, Pataskla, O.	2 00
222. Cows and heifers 3 years old and over—	
(1) L. V. Axtell, Perry, O.	12 00
(2) McCormick & Edgerly, Pataskia, O.	8 00
(3) L. V. Axtell, Perry, O.	4 00
223. Cows and heifers 2 years old and under 3—	
(1) L. V. Axtell, Perry, O.	8 00
(2) McCormick & Edgerly, Pataskia, O.	6 00
(3) L. V. Axtell, Perry, O.	3 00
224. Cows and heifers 1 year old and under 2—	
(1) L. V. Axtell, Perry, O.	6 00
(2) McCormick & Edgerly, Pataskla, Ohio	3 00
(3) L. V. Axtell, Perry, O.	2 00
225. Calf under 1 year old—	
(1) L. V. Axtell, Perry, O.	5 00
(2) L. V. Axtell, Perry, O.	3 00
(3) McCormick & Edgerly, Pataskla, O.	2 00
226. Four animals, either sex, the get of one sire—	
(1) L. V. Axtell, Perry, O.	8 00
(2) McCormick & Edgerly, Pataskla, O.	6 00
227. Two animals, either sex, the produce of one cow—	
(1) L. V. Axtell, Perry, O.	8 00
(2) McCormick & Edgerly, Pataskla, O.	6 00
(3) L. V. Axtell, Perry, O.	3 00
228. Exhibitor's herd: One bull two years old or over, one cow 3 years old or over, one heifer 2 years old and under 3, one heifer 1 year old and under 2, and one heifer calf—	
(1) L. V. Axtell, Perry, O.	15 00
(2) McCormick & Edgerly, Pataskla, O.	10 00

229. Breeder's herd: One bull under 2 years old, two heifers 1 year old and under 2, and two heifer calves, all except the bull to be bred by the exhibitor—	
(1) L. V. Axtell, Perry, O.	15 00
(2) McCormick & Edgerly, Pataskla, O.	10 00

SWEEPSTAKES.

230. Best bull, any age—	
(1) L. V. Axtell, Perry, O.	20 00
231. Best cow or heifer, any age—	
(1) L. V. Axtell, Perry, O.	20 00

CLASS XXII—Dairy and Creamery Products.

(E. F. Doolittle, Indianapolis, Judge.)

232. For 30-pound tub creamery butter—	
(1) Spiceland Creamery Co., Spiceland, Ind.	$20 00
(2) Spiceland Creamery Co., Spiceland, Ind.	15 00
(3) Perry L. Johnson, Prairie Creek, Ind.	10 00
(4) Perry L. Johnson, Prairie Creek, Ind.	5 00
233. For 15-pound tub dairy butter, the product of one herd and made on the farm—	
(1) Peter Raab, Malott Park, Ind.	12 00
(2) W. G. Bradford, Marion, Ind.	8 00
(3) Mrs. Jerome Dunlap, Lafayette, Ind.	6 00
(4) Mrs. Bettie Clore, Bargersville, Ind.	3 00
234. For five pounds dairy butter in 1-pound prints—	
(1) Chas. Lamont, Joppa, Ind.	8 00
(2) C. B. Benjamin, Leroy, Ind.	6 00
(3) W. G. Bradford, Marion, Ind.	4 00
(4) Peter Raab, Malott Park, Ind.	2 00
235. For five pounds dairy butter in 1-pound prints, made by former student of dairy school—	
236. For full cream cheese, not less than 30 pounds—	
(1) A. E. Helmer, Evans Mills, N. Y.	20 00
(2) McCain & Co., Hortonville, Ind.	15 00
(3) McCain & Co., Hortonville, Ind.	10 00
(4) W. L. McCain, Hortonville, Ind.	5 00
237. For cottage cheese, not less than one print, exhibited in standard jelly glasses—	
(1) Mrs. Herman Barlow, Greenwood, Ind.	3 00
(2) Mrs. Bettie Clore, Bargersville, Ind.	2 00
(3) Ada A. Norwood, Southport, Ind.	1 00

CLASS XXIII—Shropshire Sheep.

(W. H. Beattie and H. W. Gibson, Judges.)

RAMS.

239. One year old or over—	
(1) G. Howard Davison, Millbrook, N. Y	$12 00
(2) G. Howard Davison, Millbrook, N. Y	8 00
(3) I. J. Williams & Sons, Yorktown, Ind	6 00
(4) G. Howard Davison, Millbrook, N. Y	5 00
240. One year old and under 2—	
(1) Geo. Allen, Allerton, Ill	12 00
(2) G. Howard Davison, Millbrook, N. Y	8 00
(3) Geo. Allen, Allerton, Ill	6 00
(4) Geo. Allen, Allerton, Ill	5 00
241. Lamb—	
(1) Geo. Allen, Allerton, Ill	12 00
(2) G. Howard Davison, Millbrook, N. Y	8 00
(3) G. Howard Davison, Millbrook, N. Y	6 00
(4) Geo. Allen, Allerton, Ill	5 00
241½. Best pen five rams, any age—	
(1) Geo. Allen, Allerton, Ill	12 00
(2) G. Howard Davison, Millbrook, N. Y	8 00
(3) I. J. Williams & Son, Yorktown, Ind	6 00
(4) Wm. Furry & Son, Greenfield, Ind	5 00

EWES.

242. Two years old or over—	
(1) G. Howard Davison, Millbrook, N. Y	12 00
(2) Geo. Allen, Allerton, Ill	8 00
(3) Geo. Allen, Allerton, Ill	6 00
(4) I. J. Williams & Son, Yorktown, Ind	5 00
243. One year old and under 2—	
(1) G. Howard Davison, Millbrook, N. Y	12 00
(2) G. Howard Davison, Millbrook, N. Y	8 00
(3) G. Howard Davison, Millbrook, N. Y	6 00
(4) Geo. Allen, Allerton, Ill	5 00
244. Lamb—	
(1) Geo. Allen, Allerton, Ill	12 00
(2) Geo. Allen, Allerton, Ill	8 00
(3) G. Howard Davison, Millbrook, N. Y	6 00
(4) Geo. Allen, Allerton, Ill	5 00
245. Aged flock—	
(1) Geo. Allen, Allerton, Ill	12 00
(2) G. Howard Davison, Millbrook, N. Y	8 00
(3) I. J. Williams & Son, Yorktown, Ind	6 00
(4) Wm. Axe & Sons, Westchester, Ind	5 00

246.	Young flock—	
	(1) Geo. Allen, Allerton, Ill.	12 00
	(2) G. Howard Davison, Millbrook, N. Y.	8 00
	(3) Wm. Axe & Sons, Westchester, Ind.	6 00
247.	Best ram, any age—	
	(1) Geo. Allen, Allerton, Ill.	12 00
248.	Best ewe, any age—	
	(1) G. Howard Davison, Millbrook, N. Y.	12 00

CLASS XXIV—Oxford Down.

(W. H. Beattie and W. H. Gibson, Judges.)

RAMS.

249.	Two years old or over—	
	(1) Geo. McKerrow & Sons, Sussex, Wis.	$10 00
	(2) P. J. Stone, Stonington, Ill.	6 00
	(3) Geo. McKerrow & Sons, Sussex, Wis.	4 00
250.	One year old and under 2—	
	(1) Geo. McKerrow & Sons, Sussex, Wis.	10 00
	(2) Geo. McKerrow & Sons, Sussex, Wis.	6 00
	(3) P. J. Stone, Stonington, Ill.	4 00
251.	Lamb—	
	(1) P. J. Stone, Stonington, Ill.	10 00
	(2) P. J. Stone, Stonington, Ill.	6 00
	(3) Wilson Bros., Muncie, Ind.	4 00

EWES.

252.	Two years old or over—	
	(1) P. J. Stone, Stonington, Ill.	10 00
	(2) Geo. McKerrow & Sons, Sussex, Wis.	6 00
	(3) Geo. McKerrow & Sons, Sussex, Wis.	4 00
253.	One year old and under 2—	
	(1) P. J. Stone, Stonington, Ill.	10 00
	(2) Geo. McKerrow & Sons, Sussex, Ind.	6 00
	(3) Geo. McKerrow & Sons, Sussex, Wis.	4 00
254.	Lamb—	
	(1) Geo. McKerrow & Sons, Sussex, Wis.	10 00
	(2) P. J. Stone, Stonington, Ill.	6 00
	(3) P. J. Stone, Stonington, Ill.	4 00

FLOCKS.

255.	Aged flocks—	
	(1) P. J. Stone, Stonington, Ill.	10 00
	(2) Wilson Bros., Muncie, Ind.	6 00
	(3) P. J. Stone, Stonington, Ill.	4 00

256. Young flocks—	
(1) P. J. Stone, Stonington, Ill	10 00
(2) Wilson Bros., Muncie, Ind	6 00
257. Best ram, any age—	
(1) Geo. McKerrow & Sons, Sussex, Wis	10 00
258. Best ewe, any age—	
(1) P. J. Stone, Stonington, Ill	10 00

AMERICAN OXFORD DOWN—SPECIALS.

259. Best yearling ram—	
(1) Wilson Bros., Muncie, Ind	6 00
260. Best yearling ewe—	
(1) Wilson Bros., Muncie, Ind	6 00
261. Best pen of 4 lambs, either sex—	
(1) Wilson Bros., Muncie, Ind	6 00

CLASS XXV—Southdown.

(W. H. Beattie and H. W. Gibson, Judges.)

RAMS.

262. Two years old or over—	
(1) Geo. Allen, Allerton, Ill	$10 00
(2) Geo. McKerrow & Sons, Sussex, Wis	6 00
(3) Geo. Allen, Allerton, Ill	4 00
263. One year old and under 2—	
(1) Geo. McKerrow & Sons, Sussex, Wis	10 00
(2) Geo. Allen, Allerton, Ill	6 00
(3) Wat Wilson & Sons, Muncie, Ind	4 00
264. Lamb—	
(1) Geo. McKerrow & Sons, Sussex, Wis	10 00
(2) Geo. Allen, Allerton, Ill	6 00
(3) Geo. McKerrow & Sons, Sussex, Wis	4 00

EWES.

265. Two years old or over—	
(1) Geo. McKerrow & Sons, Sussex, Wis	10 00
(2) Geo. Allen, Allerton, Ill	6 00
(3) Geo. McKerrow & Sons, Sussex, Wis	4 00
266. One year old and under 2—	
(1) Geo. Allen, Allerton, Ill	10 00
(2) Geo. McKerrow & Sons, Sussex, Wis	6 00
(3) Geo. Allen, Allerton, Ill	4 00

267. Lamb—	
(1) Geo. Allen, Allerton, Ill.	10 00
(2) Geo. McKerrow & Sons, Sussex, Wis.	6 00
(3) Geo. McKerrow & Sons, Sussex, Wis.	4 00

FLOCKS.

268. Aged flock—	
(1) Watt Wilson & Son, Muncie, Ind.	
(2) Watt Wilson & Son, Muncie, Ind.	
269. Young flock—	
(1) Watt Wilson & Son, Muncie, Ind.	

SWEEPSTAKES.

270. Best ram, any age—	
(1) Geo. McKerrow & Sons, Sussex, Wis.	10 00
271. Best ewe, any age—	
(1) Geo. Allen, Allerton, Ill.	10 00

CLASS XXVI—Hampshire Down.

(H. W. Gibson, Judge.)

RAMS.

272. Two years old or over—	
(1) John Milton, Marshall, Mich.	$8 00
(2) P. W. Artz, Bentonville, Ind.	4 00
(3) P. W. Artz, Bentonville, Ind.	2 00
273. One year old and under 2—	
(1) P. W. Artz, Bentonville, Ind.	5 00
(2) P. W. Artz, Bentonville, Ind.	3 00
(3) P. W. Artz, Bentonville, Ind.	2 00
274. Lamb—	
(1) P. W. Artz, Bentonville, Ind.	
(2) P. W. Artz, Bentonville, Ind.	
(3) P. W. Artz, Bentonville, Ind.	

EWES.

275. Two years old or over—	
(1) P. W. Artz, Bentonville, Ind.	8 00
(2) P. W. Artz, Bentonville, Ind.	4 00
(3) John Milton, Marshall, Mich.	2 00
276. One year old and under 2—	
(1) John Milton, Marshall, Mich.	5 00
(2) P. W. Artz, Bentonville, Ind.	3 00
(3) P. W. Artz, Bentonville, Ind.	2 00

277.	Lamb—	
	(1) John Milton, Marshall, Mich.	5 00
	(2) P. W. Artz, Bentonville, Ind.	3 00
	(3) P. W. Artz, Bentonville, Ind.	2 00

FLOCKS.

278.	Aged flock—	
	(1) John Milton, Marshall, Mich.	5 00
	(2) P. W. Artz, Bentonville, Ind.	3 00
279.	Young flock—	
	(1) P. W. Artz, Bentonville, Ind.	5 00

SWEEPSTAKES.

280.	Best ram, any age—	
	(1) John Milton, Marshall, Mich.	5 00
281.	Best ewe, any age—	
	(1) P. W. Artz, Bentonville, Ind.	5 00

CLASS XXVII—Cotswold.

(W. H. Beattie and H. W. Gibson, Judges.)

282.	Ram two years old or over—	
	(1) Lewis Bros., Camp Point, Ill.	$10 00
	(2) Wilson Bros., Muncie, Ind.	6 00
	(3) Geo. Harding & Sons, Waukesha, Wis.	4 00
283.	One year old and under 2—	
	(1) Geo. Harding & Sons, Waukesha, Wis.	10 00
	(2) Wilson Bros., Muncie, Ind.	6 00
	(3) Lewis Bros., Camp Point, Ill.	4 00
284.	Lamb—	
	(1) Geo. Harding & Sons, Waukesha, Wis.	10 00
	(2) Geo. Harding & Sons, Waukesha, Wis.	6 00
	(3) Geo. Harding & Sons, Waukesha, Wis.	4 00

EWES.

285.	Two years old or over—	
	(1) Geo. Harding & Sons, Waukesha, Wis.	10 00
	(2) Geo. Harding & Sons, Waukesha, Wis.	6 00
	(3) Wilson Bros. Muncie, Ind.	4 00
286.	One year old and under 2—	
	(1) Geo. Harding & Sons, Waukesha, Wis.	10 00
	(2) Geo. Harding & Sons, Waukesha, Wis.	6 00
	(3) Lewis Bros., Camp Point, Ill.	4 00

287. Lamb—	
(1) Geo. Harding & Sons, Waukesha, Wis.	10 00
(2) Lewis Bros., Camp Point, Ill.	6 00
(3) Geo. Harding & Sons, Waukesha, Wis.	4 00

FLOCKS.

288. Aged flock—	
(1) Lewis Bros., Camp Point, Ill.	10 00
(2) Wilson Bros., Muncie, Ind.	6 00
289. Young flock—	
(1) Wilson Bros., Muncie, Ind.	10 00
(2) Wilson Bros., Muncie, Ind.	6 00
(3) Lewis Bros., Camp Point, Ill.	4 00

SWEEPSTAKES.

290. Best ram, any age—	
(1) Geo. Harding & Sons, Waukesha, Wis.	10 00
291. Best ewe, any age—	
(1) Geo. Harding & Sons, Waukesha, Wis.	10 00

CLASS XXVIII—Dorsets.

(W. H. Beattie, Judge.)

296. Ram lamb—	
(1) W. B. Hale, Geneva, Ind.	$5 00

EWES.

298. One year old and under 2—	
(1) W. B. Hale, Geneva, Ind.	5 00
(2) W. B. Hale, Geneva, Ind.	3 00
(3) W. B. Hale, Geneva, Ind.	2 00
299. Lamb—	
(1) W. B. Hale, Geneva, Ind.	5 00
(2) W. B. Hale, Geneva, Ind.	3 00
(3) W. B. Hale, Geneva, Ind.	2 00

CLASS XXIX—Rambouilett.

(U. C. Brouse, Kendallville, Ind., Judge.)

RAMS.

304. Two years old or over—	
(1) Geo. Harding & Sons, Waukesha, Wis.	$8 00
(2) Geo. Harding & Sons, Waukesha, Wis.	4 00
(3) Shaw & Bader, Marits, Ohio	2 00

305. One year old and under 2—	
(1) Geo. Harding & Sons, Waukesha, Wis.	8 00
(2) Geo. Harding & Sons, Waukesha, Wis.	3 00
(3) Shaw & Bader, Marits, Ohio	2 00
306. Lamb—	
(1) Shaw & Bader, Marits, Ohio	5 00
(2) Shaw & Bader, Marits, Ohio	3 00
(3) Geo. Harding & Sons, Waukesha, Wis.	2 00

EWES.

307. Two years old or over—	
(1) Geo. Harding & Sons, Waukesha, Wis.	8 00
(2) Geo. Harding & Sons, Waukesha, Wis.	4 00
(3) Geo. Harding & Sons, Waukesha, Wis.	2 00
308. One year old and under 2—	
(1) Geo. Harding & Sons, Waukesha, Wis.	5 00
(2) Geo. Harding & Sons, Waukesha, Wis.	3 00
(3) Geo. Harding & Sons, Waukesha, Wis.	2 00
309. Lamb—	
(1) Geo. Harding & Sons, Waukesha, Wis.	5 00
(2) Shaw & Bader, Marits, Ohio	3 00
(3) Geo. Harding & Sons, Waukesha, Wis.	2 00

FLOCKS.

310. Aged flocks—	
(1) Shaw & Bader, Marits, Ohio	5 00
(2) E. L. Davis, Davisburg, Mich.	3 00
311. Young flock—	
(1) Shaw & Bader, Marits, Ohio	5 00
(2) E. L. Davis, Davisburg, Mich.	3 00
(3) Geo. Harding & Sons, Waukesha, Wis.	2 00

SWEEPSTAKES.

312. Best ram, any age—	
(1) Geo. Harding & Sons, Waukesha, Wis.	5 00
313. Best ewe, any age—	
(1) Geo. Harding & Sons, Waukesha, Wis.	5 00

CLASS XXX—Fine Wool—American Merino.

(U. C. Brouse, Kendallville, Ind., Judge.)

RAMS.

314. Two years old or over—	
(1) R. D. Williamson, Xenia, Ohio	$8 00
(2) C. H. Bell, Ashley, Ohio	4 00
(3) R. D. Williamson, Xenia, Ohio	2 00

315. One year old and under 2—	
(1) C. H. Bell, Ashley, Ohio	5 00
(2) R. D. Williamson, Xenia, Ohio	3 00
(3) C. H. Bell, Ashley, Ohio	2 00
316. Lamb—	
(1) R. D. Williamson, Xenia, Ohio	5 00
(2) C. H. Bell, Ashley, Ohio	3 00
(3) C. H. Bell, Ashley, Ohio	2 00

EWES.

317. Two years old or over—	
(1) R. D. Williamson, Xenia, Ohio	8 00
(2) R. D. Williamson, Xenia, Ohio	4 00
(3) C. H. Bell, Ashley, Ohio	2 00
318. One year old and under 2—	
(1) R. D. Williamson, Xenia, Ohio	5 00
(2) R. D. Williamson, Xenia, Ohio	3 00
(3) C. H. Bell, Ashley, Ohio	2 00
319. Lamb—	
(1) R. D. Williamson, Xenia, Ohio	5 00
(2) C. H. Bell, Ashley, Ohio	3 00
(3) C. H. Bell, Ashley, Ohio	2 00

FLOCKS.

320. Aged flock—	
(1) R. D. Williamson, Xenia, Ohio	5 00
(2) C. H. Bell, Ashley, Ohio	3 00
(3) R. D. Williamson, Xenia, Ohio	2 00
321. Young flock—	
(1) C. H. Bell, Ashley, Ohio	5 00
(2) C. H. Bell, Ashley, Ohio	3 00

SWEEPSTAKES.

322. Best ram, any age—	
(1) R. D. Williamson, Xenia, Ohio	5 00
323. Best ewe, any age—	
(1) R. D. Williamson, Xenia, Ohio	5 00

CLASS XXXI—Delaine Merinos.

(U. C. Brouse, Kendallville, Ind., Judge.)

RAMS.

324. Two years old or over—	
(1) R. D. Williamson, Xenia, Ohio	$8 00
(2) C. H. Bell, Ashley, Ohio	4 00

325. One year old and under 2—	
(1) C. H. Bell, Ashley, Ohio	5 00
(2) C. H. Bell, Ashley, Ohio	3 00
326. Lamb—	
(1) R. D. Williamson, Xenia, Ohio	5 00
(2) C. H. Bell, Ashley, Ohio	3 00
(3) C. H. Bell, Ashley, Ohio	2 00

EWES.

327. Two years old or over—	
(1) C. H. Bell, Ashley, Ohio	8 00
(2) R. D. Williamson, Xenia, Ohio	4 00
(3) R. D. Williamson, Xenia, Ohio	2 00
328. One year old and under 2—	
(1) R. D. Williamson, Xenia, Ohio	5 00
(2) C. H. Bell, Ashley, Ohio	3 00
(3) R. D. Williamson, Xenia, Ohio	2 00
329. Lamb—	
(1) R. D. Williamsoon, Xenia, Ohio	5 00
(2) R. D. Williamson, Xenia, Ohio	3 00
(3) C. H. Bell, Ashley, Ohio	2 00

FLOCKS.

330. Aged flock—	
(1) R. D. Williamson, Xenia, Ohio	5 00
(2) C. H. Bell, Ashley, Ohio	3 00
(3) R. D. Williamson, Xenia, Ohio	2 00
331. Young flock—	
(1) R. D. Williamson, Xenia, Ohio	5 00
(2) C. H. Bell, Ashley, Ohio	3 00
(3) C. H. Bell, Ashley, Ohio	2 00

SWEEPSTAKES.

332. Best ram, any age—	
(1) R. D. Williamson, Xenia, Ohio	5 00
333. ———————	
(1) C. H. Bell, Ashley, Ohio	

CLASS XXXII—Cheviot.

(W. H. Beattie, Wilton Grove, Ont., Judge.)

RAMS.

334. Two years old or over—	
(1) F. B. Hartman, Fincastle, Ind	$8 00
(2) F. B. Hartman, Fincastle, Ind	4 00
(3) Crodian & Gardner, Fincastle, Ind	2 00

335.	One year old and under 2—	
	(1) F. B. Hartman, Fincastle, Ind	5 00
	(2) Crodian & Gardner, Fincastle, Ind	3 00
	(3) Crodian & Gardner, Fincastle, Ind	2 00
336.	Lamb—	
	(1) F. B. Hartman, Fincastle, Ind	5 00
	(2) F. B. Hartman, Fincastle, Ind	3 00
	(3) Crodian & Gardner, Fincastle, Ind	2 00

EWES.

337.	Two years old or over—	
	(1) F. B. Hartman, Fincastle, Ind	8 00
	(2) Crodian & Gardner, Fincastle, Ind	4 00
	(3) Crodian & Hartman, Fincastle, Ind	2 00
338.	One year old and under 2—	
	(1) F. B. Hartman, Fincastle, Ind	5 00
	(2) F. B. Hartman, Fincastle, Ind	3 00
	(3) Crodian & Hartman, Fincastle, Ind	2 00
339.	Lamb—	
	(1) Crodian & Gardner, Fincastle, Ind	5 00
	(2) Crodian & Gardner, Fincastle, Ind	3 00
	(3) F. B. Hartman, Fincastle, Ind	2 00

FLOCKS.

340.	Aged flock—	
	(1) F. B. Hartman, Fincastle, Ind	5 00
	(2) Crodian & Gardner, Fincastle, Ind	3 00
	(3) Crodian & Gardner, Fincastle, Ind	2 00
341.	Young flock—	
	(1) F. B. Hartman. Fincastle, Ind	5 00
	(2) Crodian & Gardner, Fincastle, Ind	3 00

SWEEPSTAKES.

342.	Best ram, any age—	
	(1) F. B. Hartman, Fincastle, Ind	5 00
343.	Best ewe, any age—	
	(1) F. B. Hartman, Fincastle, Ind	5 00

CLASS XXXIII—Swine.

(O. P. Wolcott, Conover, Ohio, Judge.)

BERKSHIRE.

344.	Boar 2 years old or over—	
	(1) Thos. Teal & Son, Attica, Ia	$12 00
	(2) A. Crawford, Columbus Grove, O	8 00
	(3) Elliott Bros., Vincennes, Ind	4 00

345. Boar 1 year old and under 2—	
(1) A. Crawford, Columbus Grove, O	10 00
(2) Thos. Teal & Son, Attica, Ia	7 00
(3) Jas. Riley's Sons, Thorntown, Ind	3 00
346. Boar 6 months old and under 12—	
(1) Karl B. Clough, North Amhurst, O	8 00
(2) Jas. Riley's Sons, Thorntown, Ind	5 00
(3) Jas. Riley's Sons, Thorntown, Ind	2 00
347. Boar under 6 months—	
(1) Jas. Riley's Sons, Thorntown, Ind	8 00
(2) I. N. Barker & Son, Thorntown, Ind	5 00
(3) I. N. Barker & Son, Thorntown, Ind	2 00
348. Sow 2 years old or over—	
(1) Thos. Teal & Son, Attica, Ia	12 00
(2) Thos. Teal & Son, Attica, Ia	8 00
(3) A. Crawford, Columbus Grove, O	4 00
349. Sow 1 year old and under 2—	
(1) A. Crawford, Columbus Grove, O	10 00
(2) Thos. Teal & Son, Attica, Ia	7 00
(3) A. Crawford, Columbus Grove, O	3 00
350. Sow 6 months old and under 12—	
(1) Karl B. Clough, North Amhurst, O	8 00
(2) Karl B. Clough, North Amhurst, O	5 00
(3) Karl B. Clough, North Amhurst, O	2 00
351. Sow under 6 months—	
(1) I. N. Barker & Son, Thorntown, Ind	8 00
(2) I. N. Barker & Son, Thorntown, Ind	5 00
(3) I. N. Barker & Son, Thorntown, Ind	2 00
352. Boar and 3 sows over 1 year old—	
(1) A. Crawford, Columbus Grove, O	20 00
(2) Thos. Teal & Son, Attica, Ia	10 00
353. Boar and 3 sows under 1 year old—	
(1) Jas. Riley's Sons, Thorntown, Ind	15 00
(2) I. N. Barker & Son, Thorntown, Ind	10 00
354. Five pigs under 1 year old, the get of one boar or produce of one sow—	
(1) Carl B. Klough, North Amhurst, O	12 00
(2) Jas. Riley's Sons, Thorntown, Ind	8 00
355. Five pigs under 6 months old—	
(1) I. N. Barker & Son, Thorntown, Ind	12 00
(2) Jas. Riley's Sons, Thorntown, Ind	8 00
356. Pair pigs under 1 year—	
(1) Jas. Riley's Sons, Thorntown, Ind	12 00
(2) I. N. Barker & Son, Thorntown, Ind	8 00

SWEEPSTAKES.

357. Boar, any age—	
(1) A. Crawford, Columbus Grove, O	20 00
358. Sow, any age—	
(1) A. Crawford, Columbus Grove, O	20 00

CLASS XXXIV—Poland China.

(Lloyd Mugg, Judge.)

359. Boar 2 years old or over—	
(1) W. O. Canady, Frankton, Ind	$12 00
(2) Alonzo Graham & Son, Greentown, Ind	8 00
(3) Lindley & Butler, Russiaville, Ind	4 00
360. Boar 1 year old and under 2—	
(1) W. O. Canady, Frankton, Ind	10 00
(2) Wm. Worl, Hagerstown, Ind	7 00
(3) J. W. Williams & Sons, Briant, Ind	3 00
361. Boar 6 months old and under 12—	
(1) Jno. G. Allen, Millville, Ind	8 00
(2) Pumphrey Bros., Burney, Ind	5 00
362. Under 6 months—	
(1) W. C. Williams & Co., Knightstown, Ind	8 00
(2) W. O. Canady, Frankton, Ind	5 00
(3) W. A. Smiley & Son, Judson, Ind	2 00
364. Sow 2 years old or over—	
(1) Lucien Arbuckle, Hope, Ind	12 00
(2) R. L. Bratton, New Ross, Ind	8 00
(3) Lindley & Butler, Russiaville, Ind	4 00
364½. Sow 1 year old and under 2—	
(1) Lucien Arbuckle, Hope, Ind	10 00
(2) R. L. Bratton, New Ross, Ind	7 00
(3) Lindley & Butler, Russiaville, Ind	3 00
365. Sow 6 months old and under 12—	
(1) Lucien Arbuckle, Hope, Ind	8 00
(2) Alonzo Graham & Son, Greentown, Ind	5 00
(3) F. Gartin & Sons, Burney, Ind	2 00
366. Under 6 months—	
(1) Mavis Bros., Edgerton, O	8 00
(2) Mavis Bros., Edgerton, O	5 00
(3) W. C. Williams & Co., Knightstown, Ind	2 00
367. Boar and 3 sows over 1 year—	
(1) W. O. Canady, Frankton, Ind	20 00
(2) Lindley & Butler, Russiaville, Ind	10 00

368. Boar and 3 sows under 1 year—	
(1) Mavis Bros., Edgerton, O.	15 00
(2) Pumphrey Bros., Burney, Ind.	10 00
369. Five pigs under 1 year old, the get of one boar or produce of one sow—	
(1) Mavis Bros., Edgerton, O.	12 00
(2) A. S. Gilmour, Greensburg, Ind.	8 00
370. Five pigs under 6 months old—	
(1) Mavis Bros., Edgerton, O.	12 00
(2) W. C. Williams & Co., Knightstown, Ind.	8 00
371. Pair pigs under 1 year old—	
(1) Mavis Bros., Edgerton, O.	12 00
(2) A. S. Gilmour, Greensburg, Ind.	8 00

SWEEPSTAKES.

372. Boar, any age—	
(1) W. O. Canady, Frankton, Ind.	20 00
373. Sow, any age—	
(1) Lucien Arbuckle, Hope, Ind.	20 00

CLASS XXXV—Chester White, Victoria, Cheshire and Large Yorkshire.

(Adam F. May, Judge.)

374. Boar 2 years old or over—	
(1) J. Gibson & Son, Muncie, Ind.	$12 00
(2) Dorsey Bros., Perry, Ind.	8 00
(3) Hinshaw Bros., Zionsville, Ind.	4 00
375. Boar 1 year old and under 2—	
(1) M. E. Newburn, Hennepin, Ill.	10 00
(2) Hinshaw Bros., Zionsville, Ind.	7 00
(3) Geo. Ineichen, Celina, O.	3 00
376. Boar 6 months old and under 12—	
(1) Dorsey Bros., Perry, Ind.	8 00
(2) Warren W. Trout, Greenwood, Ind.	5 00
(3) J. Gibson & Son, Muncie, Ind.	2 00
377. Under 6 months—	
(1) J. Gibson & Son, Muncie, Ind.	8 00
(2) Hinshaw Bros., Zionsville, Ind.	5 00
(3) Geo. Ineichen, Celina, O.	2 00
378. Sow 2 years old or over—	
(1) M. E. Newburn, Hennepin, Ill.	12 00
(2) Warren W. Trout, Greenwood, Ind.	8 00
(3) M. E. Newburn, Hennepin, Ill.	4 00

379.	Sow 1 year old and under 2—	
	(1) M. E. Newburn, Hennepin, Ill	10 00
	(2) M. E. Newburn, Hennepin, Ill	7 00
	(3) Geo. Ineichen, Celina, O	3 00
380.	Sow 6 months old and under 12—	
	(1) Dorsey Bros., Perry, Ind	8 00
	(2) J. Gibson & Son, Muncie, Ind	5 00
	(3) Warren W. Trout, Greenwood, Ind	2 00
381.	Under 6 months—	
	(1) Geo. Ineichen, Celina, O	8 00
	(2) W. W. Milner & Son, Thorntown, Ind	5 00
	(3) Geo. Ineichen, Celina, O	2 00
382.	Boar and 3 sows over 1 year—	
	(1) M. E. Newburn, Hennepin, Ill	20 00
	(2) J. Gibson & Son, Muncie, Ind	10 00
383.	Boar and 3 sows under 1 year—	
	(1) Dorsey Bros., Perry, Ind	15 00
	(2) J. Gibson & Son, Muncie, Ind	10 00
384.	Five pigs under 1 year old, the get of one boar or produce of one sow—	
	(1) W. W. Milner & Son, Thorntown, Ind	12 00
	(2) Geo. Ineichen, Celina, O	8 00
385.	Five pigs under 6 months old—	
	(1) W. W. Milner & Son, Thorntown, Ind	12 00
	(2) Geo. Ineichen, Celina, O	8 00
386.	Pair pigs under 1 year old—	
	(1) Dorsey Bros., Perry, Ind	12 00
	(2) Hinshaw Bros., Zionsville, Ind	8 00

SWEEPSTAKES.

387.	Boar, any age—	
	(1) J. Gibson & Son, Muncie, Ind	20 00
388.	Sow, any age—	
	(1) M. E. Newburn, Hennepin, Ill	20 00

CLASS XXXVI—Dorco-Jersey, Tamworth and Thin-Rind.

(Allen Beeler, Judge.)

389.	Boar 2 years old or over—	
	(1) Geo. W. Trone & Sons, Rushville, Ind	$12 00
	(2) J. B. Hilligoss, Florida, Ind	8 00
	(3) N. B. Cutler, Carthage, Ill	4 00
390.	Boar 1 year old and under 2—	
	(1) N. B. Cutler, Carthage, Ill	10 00
	(2) O. Walter & Co., Lebanon, O	7 00
	(3) Geo. W. Trone & Sons, Rushville, Ind	3 00

391. Six months old and under 12—	
(1) O. Walter & Co., Lebanon, O.	8 00
(2) C. L. Clancy & Co., Indianapolis, Ind.	5 00
(3) O. Walter & Co., Lebanon, O.	2 00
392. Under 6 months—	
(1) O. Walter & Co., Lebanon, O.	8 00
(2) N. B. Cutler, Carthage, Ill.	5 00
(3) J. B. Hilligoss, Florida, Ind.	2 00
393. Sow 2 years old or over—	
(1) Geo. W. Trone & Sons, Rushville, Ind.	12 00
(2) O. Walter & Co., Lebanon, O.	8 00
(3) N. B. Cutler, Carthage, Ill.	4 00
394. Sow 1 year old and under 2—	
(1) O. Walter & Co., Lebanon, O.	10 00
(2) O. Walter & Co., Lebanon, O.	7 00
(3) N. B. Cutler, Carthage, Ill.	3 00
395. Six months old and under 12—	
(1) O. Walter & Co., Lebanon, O.	8 00
(2) O. Walter & Co., Lebanon, O.	5 00
(3) N. B. Cutler, Carthage, Ill.	2 00
396. Under 6 months—	
(1) J. B. Hilligoss, Florida, Ind.	8 00
(2) N. B. Cutler, Carthage, Ill.	5 00
(3) N. B. Cutler, Carthage, Ill.	2 00

HERDS.

397. Boar and 3 sows over 1 year—	
(1) Geo. W. Trone & Sons, Rushville, Ind.	20 00
(2) O. Walter & Co., Lebanon, O.	10 00
398. Boar and 3 sows under 1 year—	
(1) O. Walter & Co., Lebanon, O.	15 00
(2) Geo. W. Trone & Sons, Rushville, Ind.	10 00
399. Five pigs under 1 year, the get of one boar or produce of one sow—	
(1) O. Walter & Co., Lebanon, O.	12 00
(2) J. B. Hilligoss, Florida, Ind.	8 00
400. Five pigs under 6 months—	
(1) J. B. Hilligoss, Florida, Ind.	12 00
(2) J. B. Hilligoss, Florida, Ind.	8 00
401. Pair pigs under 1 year old—	
(1) O. Walter & Co., Lebanon, O.	12 00
(2) O. Walter & Co., Lebanon, O.	8 00

SWEEPSTAKES.

402. Boar, any age—	
(1) Geo. W. Trone & Sons, Rushville, Ind	20 00
403. Sow, any age—	
(1) O. Walter & Co., Lebanon, O	20 00

CLASS XXXVII—Essex.

(Adam F. May, Judge.)

BOARS.

404. Two years old or over—	
(1) A. C. Green & Sons, Winchester, Ind	$5 00
(2) A. C. Green & Sons, Winchester, Ind	3 00
405. One year old and under 2—	
(1) A. C. Green & Sons, Winchester, Ind	4 00
406. Six months old and under 12—	
(1) A. C. Green & Sons, Winchester, Ind	3 00
(2) A. C. Green & Sons, Winchester, Ind	2 00
407. Under 6 months—	
(1) A. C. Green & Sons, Winchester, Ind	3 00
(2) A. C. Green & Sons, Winchester, Ind	2 00

SOWS.

408. Two years old or over—	
(1) A. C. Green & Sons, Winchester, Ind	5 00
409. One year old and under 2—	
(1) A. C. Green & Sons, Winchester, Ind	4 00
(2) A. C. Green & Sons, Winchester, Ind	2 00
410. Six months old and under 12—	
(1) A. C. Green & Sons, Winchester, Ind	3 00
(2) A. C. Green & Sons, Winchester, Ind	2 00
411. Under 6 months—	
(1) A. C. Green & Sons, Winchester, Ind	3 00
(2) A. C. Green & Sons, Winchester, Ind	2 00

HERDS.

412. Boar and 3 sows over 1 year—	
(1) A. C. Green & Sons, Winchester, Ind	5 00
413. Boar and 3 sows under 1 year—	
(1) A. C. Green & Sons, Winchester, Ind	5 00
(2) A. C. Green & Sons, Winchester, Ind	3 00

414. Five pigs under 1 year, the get of one boar or produce of one sow—	
(1) A. C. Green & Sons, Winchester, Ind	4 00
(2) A. C. Green & Sons, Winchester, Ind	2 00
415. Five pigs under 6 months—	
(1) A. C. Green & Sons, Winchester, Ind	4 00
(2) A. C. Green & Sons, Winchester, Ind	2 00
416. Pair pigs under 1 year—	
(1) A. C. Green & Sons, Winchester, Ind	4 00
(2) A. C. Green & Sons, Winchester, Ind	2 00

CLASS XXXVIII—Suffolk.

(Adam F. May, Judge.)

BOARS.

417. Two years old or over—	
(1) A. C. Green & Sons, Winchester, Ind	$5 00
(2) A. C. Green & Sons, Winchester, Ind	3 00
418. One year old and under 2—	
(1) A. C. Green & Sons, Winchester, Ind	4 00
419. Six months old and under 12—	
(1) A. C. Green & Sons, Winchester, Ind	3 00
(2) A. C. Green & Sons, Winchester, Ind	2 00
420. Under 6 months—	
(1) A. C. Green & Sons, Winchester, Ind	3 00
(2) A. C. Green & Sons, Winchester, Ind	2 00

SOWS.

421. Two years old or over—	
(1) A. C. Green & Sons, Winchester, Ind	5 00
(2) A. C. Green & Sons, Winchester, Ind	3 00
422. One year old and under 2—	
(1) A. C. Green & Sons, Winchester, Ind	4 00
(2) A. C. Green & Sons, Winchester, Ind	2 00
423. Six months old and under 12—	
(1) A. C. Green & Sons, Winchester, Ind	3 00
424. Under 6 months—	
(1) A. C. Green & Sons, Winchester, Ind	3 00
(2) A. C. Green & Sons, Winchester, Ind	2 00

HERDS.

425. Boar and 3 sows over 1 year—	
(1) A. C. Green & Sons, Winchester, Ind	5 00
426. Boar and 3 sows under 1 year—	
(1) A. C. Green & Sons, Winchester, Ind	5 00
(2) A. C. Green & Sons, Winchester, Ind	3 00

427. Five pigs under 1 year, the get of one boar or produce of one sow—	
(1) A. C. Green & Sons, Winchester, Ind	4 00
(2) A. C. Green & Sons, Winchester, Ind	2 00
428. Five pigs under 6 months—	
(1) A. C. Green & Sons, Winchester, Ind	4 00
(2) A. C. Green & Sons, Winchester, Ind	2 00
429. Pair pigs under 1 year old—	
(1) A. C. Green & Sons, Winchester, Ind	4 00
(2) A. C. Green & Sons, Winchester, Ind	2 00

CLASS XXXIX—Small Yorkshire.

(Adam F. May, Judge.)

BOARS.

430. Two years old or over—	
(1) J. L. McMurray, California, Mich	$5 00
431. One year old and under 2—	
(1) J. L. McMurray, California, Mich	5 00
432. Six months and under 12—	
(1) J. L. McMurray, California, Mich	3 00
(2) J. L. McMurray, California, Mich	2 00
433. Under 6 months—	
(1) J. L. McMurray, California, Mich	3 00
(2) J. L. McMurray, California, Mich	2 00

SOWS.

434. Two years old or over—	
(1) J. L. McMurray, California, Mich	5 00
(2) J. L. McMurray, California, Mich	3 00
435. One year old and under 2—	
(1) J. L. McMurray, California, Mich	4 00
(2) J. L. McMurray, California, Mich	2 00
436. Six months and under 12—	
(1) J. L. McMurray, California, Mich	3 00
(2) J. L. McMurray, California, Mich	2 00
437. Under 6 months—	
(1) J. L. McMurray, California, Mich	3 00
(2) J. L. McMurray, California, Mich	2 00

HERDS.

438. Boar and 3 sows over 1 year—	
(1) J. L. McMurray, California, Mich	5 00
439. Boar and 3 sows under 1 year—	
(1) J. L. McMurray, California, Mich	5 00
(2) J. L. McMurray, California, Mich	

440. Five pigs under 1 year, the get of one boar or produce of one sow—	
(1) J. L. McMurray, California, Mich	4 00
(2) J. L. McMurray, California, Mich	2 00
441. Five pigs under 6 months—	
(1) J. L. McMurray, California, Mich	4 00
442. Pair pigs under 1 year—	
(1) J. L. McMurray, California, Mich	4 00
(2) J. L. McMurray, California, Mich	2 00

CLASS XL—Poultry.

POULTRY.

(Ben S. Myers, Crawfordsville, Ind.; Robert Halte, Owensboro, Ky.; H. B. Miller, Nashville, Ind., and R. E. Jones, Flat Rock, Ind., Judges.)

ASIATICS.

443. Light Brahma cock—	
(1) Frank P. Johnson, Howland, Ind	$3 00
(2) B. F. Duncan, Greenfield, Ind	1 50
444. Light Brahma hen—	
(1) J. P. Painter, Middletown, Ind	3 00
(2) J. C. Fichel & Son, Hope, Ind	1 50
445. Light Brahma cockerel—	
(1) J. C. Fishel & Son, Hope, Ind	3 00
(2) J. C. Fishel & Son, Hope, Ind	1 50
446. Light Brahma pullet—	
(1) Frank P. Johnson, Howland, Ind	3 00
(2) J. C. Fishel & Son, Hope, Ind	1 50
447. Light Brahma pen—	
(1) J. C. Fishel & Son, Hope, Ind	5 00
(2) Frank P. Johnson, Howland, Ind	3 00
448. Dark Brahma cock—	
(1) C. E. & W. Smith, Ashley, O	1 50
(2) J. H. Evan, Greenfield, Ind	75
449. Dark Brahma hen—	
(1) C. E. & W. Smith, Ashley, O	1 50
(2) C. E. & W. Smith, Ashley, O	75
450. Dark Brahma cockerel—	
(1) Warbritton Bros., Ladoga, Ind	1 50
(2) T. H. Buck, Morristown, Ind	75
451. Dark Brahma pullet—	
(1) C. E. & W. Smith, Ashley, O	1 50
(2) T. H. Buck, Morristown, Ind	75

452. Dark Brahma pen—	
(1) C. E. & W. Smith, Ashley, O.	4 00
(2) Warbritton Bros., Ladoga, Ind.	2 00
453. Buff Cochin cock—	
(1) J. J. Van Winkle, Mechanicsburg, Ind.	3 00
(2) Warbritton Bros., Ladoga, Ind.	1 50
454. Buff Cochin hen—	
(1) Warbritton Bros., Ladoga, Ind.	3 00
(2) J. J. Burnside, Milligan, Ind.	1 50
455. Buff Cochin cockerel—	
(1) Jno. E. Walker, Martinsville, Ind.	3 00
(2) John E. Walker, Martinsville, Ind.	1 50
456. Buff Cochin pullet—	
(1) Jno. E. Walker, Martinsville, Ind.	3 00
(2) Warbritton Bros., Ladoga, Ind.	1 50
457. Buff Cochin pen—	
(1) John E. Walker, Martinsville, Ind.	4 00
(2) J. J. Van Winkle, Mechanicsburg, Ind.	2 00
458. White Cochin cock—	
(1) W. O. Swain, Manilla, Ind.	1 50
(2) Warbritton Bros., Ladoga, Ind.	75
459. White Cochin hen—	
(1) Warbritton Bros., Ladoga, Ind.	1 50
(2) F. M. Meloy, Shelbyville, Ind.	75
460. White Cochin cockerel—	
(1) W. O. Swain, Manilla, Ind.	1 50
(2) Warbritton Bros., Ladoga, Ind.	75
461. White Cochin pullet—	
(1) Warbritton Bros., Ladoga, Ind.	1 50
(2) Warbritton Bros., Ladoga, Ind.	75
462. White Cochin pen—	
(1) Warbritton Bros., Ladoga, Ind.	4 00
(2) W. O. Swain, Manilla, Ind.	2 00
463. Black Cochin cock—	
(1) Warbritton Bros., Ladoga, Ind.	1 50
(2) Mrs. R. W. Williams, City	75
464. Black Cochin hen—	
(1) E. E. Souers, Warren, Ind.	1 50
(2) E. E. Souers, Warren, Ind.	75
465. Black Cochin cockerel—	
(1) B. F. Duncan, Greenfield, Ind.	1 50
(2) E. E. Souers, Warren, Ind.	75
466. Black Cochin pullet—	
(1) Warbritton Bros., Ladoga, Ind.	1 50
(2) E. E. Souers, Warren, Ind.	75

467. Black Cochin pen—	
(1) Warbritton Bros., Ladoga, Ind.	4 00
(2) E. E. Souers, Warren, Ind.	2 00
468. Partridge Cochin cock—	
(1) Warbritton Bros., Ladoga, Ind.	3 00
(2) B. F. Duncan, Greenfield, Ind.	1 50
469. Partridge Cochin hen—	
(1) C. E. & W. Smith, Ashley, O.	3 00
(2) B. F. Duncan, Greenfield, Ind.	1 50
470. Partridge Cochin cockerel—	
(1) C. E. & W. Smith, Ashley, O.	3 00
(2) C. E. & W. Smith, Ashley, O.	1 50
471. Partridge Cochin pullet—	
(1) C. E. & W. Smith, Ashley, O.	3 00
(2) Warbritton Bros., Ladoga, Ind.	1 50
472. Partridge Cochin pen—	
(1) C. E. & W. Smith, Ashley, O.	4 00
(2) Warbritton Bros., Ladoga, Ind.	2 00
473. Black Langshan cock—	
(1) G. W. Wilkins, New Lancaster, Ind.	3 00
(2) J. A. Horning, Shelbyville, Ind.	1 50
474. Black Langshan hen—	
(1) G. W. Wilkins, New Lancaster, Ind.	3 00
(2) J. H. Evan, Greenfield, Ind.	1 50
475. Black Langshan cockerel—	
(1) Lora C. Hoss, Kokomo, Ind.	3 00
(2) Lora C. Hoss, Kokomo, Ind.	1 50
476. Black Langshan pullet—	
(1) Lora C. Hoss, Kokomo, Ind.	3 00
(2) Lora C. Hoss, Kokomo, Ind.	1 50
477. Black Langshan pen—	
(1) G. W. Wilkins, New Lancaster, Ind.	5 00
(2) Lora C. Hoss, Kokomo, Ind.	3 00
478. White Langshan cock—	
(1) F. M. Smiley & Son, Milligan, Ind.	1 50
(2) T. M. Campbell, Darlington, Ind.	75
479. White Langshan hen—	
(1) F. M. Smiley & Son, Milligan, Ind.	1 50
(2) F. M. Smiley & Son, Milligan, Ind.	75
480. White Langshan cockerel—	
(1) F. M. Smiley & Son, Milligan, Ind.	1 50
(2) T. M. Campbell, Darlington, Ind.	75
481. White Langshan pullet—	
(1) F. M. Smiley & Son, Milligan, Ind.	1 50
(2) F. M. Smiley & Son, Milligan, Ind.	75

482.	White Langshan pen—	
	(1) F. M. Smiley & Son, Milligan, Ind.	4 00
	(2) T. M. Campbell, Darlington, Ind.	2 00

AMERICAN.

483.	Barred Plymouth Rock cock—	
	(1) Geo. Muck, Edinburg, Ind.	3 00
	(2) Geo. Muck, Edinburg, Ind.	1 50
484.	Barred Plymouth Rock hen—	
	(1) Geo. Muck, Edinburg, Ind.	3 00
	(2) W. O. Swain, Manilla, Ind.	1 50
485.	Barred Plymouth Rock cockerel—	
	(1) Geo. Muck, Edinburg, Ind.	3 00
	(2) Geo. Muck, Edinburg, Ind.	1 50
486.	Barred Plymouth Rock pullet—	
	(1) E. B. Murphy, Carmel, Ind.	3 00
	(2) Collins Bros., Bainbridge, Ind.	1 50
487.	Barred Plymouth Rock pen—	
	(1) Geo. Muck, Edinburg, Ind.	5 00
	(2) Geo. Muck, Edinburg, Ind.	3 00
488.	White Plymouth Rock cock—	
	(1) Wm. Grose, Middletown, Ind.	3 00
	(2) Henry C. Forgey, Crawfordsville, Ind.	1 50
489.	White Plymouth Rock hen—	
	(1) Collins Bros., Bainbridge, Ind.	3 00
	(2) Wm. Grose, Middletown, Ind.	1 50
490.	White Plymouth Rock cockerel—	
	(1) J. R. Matthew, Boggstown, Ind.	3 00
	(2) J. R. Matthew, Boggstown, Ind.	1 50
491.	White Plymouth Rock pullet—	
	(1) E. B. Murphy, Carmel, Ind.	3 00
	(2) E. B. Murphy, Carmel, Ind.	1 50
492.	White Plymouth Rock pen—	
	(1) E. B. Murphy, Carmel, Ind.	5 00
	(2) J. R. Matthew, Boggstown, Ind.	3 00
493.	Buff Plymouth Rock cock—	
	(1) A. L. Weckler, Bunker Hill, Ind.	2 00
	(2) C. S. Byers, Boggstown, Ind.	1 00
494.	Buff Plymouth Rock hen—	
	(1) A. L. Weckler, Bunker Hill, Ind.	2 00
	(2) A. L. Weckler, Bunker Hill, Ind.	1 00
495.	Buff Plymouth Rock cockerel—	
	(1) A. L. Weckler, Bunker Hill, Ind.	2 00
	(2) A. L. Weckler, Bunker Hill, Ind.	1 00

496. Buff Plymouth Rock pullet—	
(1) A. L. Weckler, Bunker Hill, Ind.	2 00
(2) E. B. Murphy, Carmel, Ind.	1 00
497. Buff Plymouth Rock pen—	
(1) A. L. Weckler, Bunker Hill, Ind.	4 00
(2) Ed. Carver, Columbia City, Ind.	2 00

WYANDOTTES.

498. Buff Wyandotte cock—	
(1) Indiana Poultry Farm, Indianapolis, Ind.	2 00
499. Buff Wyandotte hen—	
(1) Indiana Poultry Farm, Indianapolis, Ind.	2 00
(2) Indiana Poultry Farm, Indianapolis, Ind.	1 00
500. Buff Wyandotte cockerel—	
501. Buff Wyandotte pullet—	
502. Buff Wyandotte pen—	
(1) Indiana Poultry Farm, Indianapolis, Ind.	4 00
503. Silver Wyandotte cock—	
(1) F. H. Meloy, Shelbyville, Ind.	2 00
504. Silver Wyandotte hen—	
(1) Wm. Grose, Middletown, Ind.	2 00
(2) F. M. Meloy, Shelbyville, Ind.	1 00
505. Silver Wyandotte cockerel—	
(1) C. E. & W. Smith, Ashley, O.	2 00
(2) F. M. Meloy, Shelbyville, Ind.	1 00
506. Silver Wyandotte pullet—	
(1) Morton Ingalls, Middletown, O.	2 00
(2) Morton Ingalls, Middletown, O.	1 00
507. Silver Wyandotte pen—	
(1) F. M. Meloy, Shelbyville, Ind.	4 00
(2) Morton Ingalls, Middletown, O.	2 00
508. Golden Wyandotte cock—	
(1) J. J. Burnside, Milligan, Ind.	2 00
(2) C. E. & W. Smith, Ashley, O.	1 00
509. Golden Wyandotte hen—	
(1) C. E. & W. Smith, Ashley, O.	2 00
(2) Fred D. Sparks, Zionsville, Ind.	1 00
510. Golden Wyandotte cockerel—	
(1) Fred D. Sparks, Zionsville, Ind.	2 00
(2) C. E. & W. Smith, Ashley, O.	1 00
511. Golden Wyandotte pullet—	
(1) J. A. Horning, Shelbyville, Ind.	2 00
(2) C. E. & W. Smith, Ashley, O.	1 00

512.	Golden Wyandotte pen—	
	(1) C. E. & W. Smith, Ashley, O.	4 00
	(2) Fred D. Sparks, Zionsville, Ind.	2 00
513.	White Wyandotte cock—	
	(1) Charles V. Keeler, Winamac, Ind.	2 00
	(2) J. J. Burnside, Milligan, Ind.	1 00
514.	White Wyandotte hen—	
	(1) C. H. Bell, Ashley, O.	2 00
	(1) Charles V. Keeler, Winamac, Ind.	1 00
515.	White Wyandotte cockerel—	
	(1) Charles V. Keeler, Winamac, Ind.	2 00
	(2) C. H. Bell, Ashley, O.	1 00
516.	White Wyandotte pullet—	
	(1) J. J. Burnside, Milligan, Ind.	2 00
	(2) C. E. & W. Smith, Ashley, O.	1 00
517.	White Wyandotte pen—	
	(1) Charles V. Keeler, Winamac, Ind.	4 00
	(2) C. H. Bell, Ashley, O.	2 00

LEGHORNS.

518.	S. C. White Leghorn cock—	
	(1) James L. Wood, Elwood, Ind.	2 00
	(2) B. F. Hill, Indianapolis, Ind.	1 00
519.	S. C. White Leghorn hen—	
	(1) James L. Wood, Elwood, Ind.	2 00
	(2) James L. Wood, Elwood, Ind.	1 00
520.	S. C. White Leghorn cockerel—	
	(1) W. O. Swain, Manilla, Ind.	2 00
	(2) J. J. Van Winkle, Mechanicsburg, Ind.	1 00
521.	S. C. White Leghorn pullet—	
	(1) W. O. Swain, Manilla, Ind.	2 00
	(2) W. O. Swain, Manilla, Ind.	1 00
522.	S. C. White Leghorn pen—	
	(1) James L. Wood, Elwood, Ind.	4 00
	(2) W. O. Swain, Manilla, Ind.	2 00
523.	R. C. White Leghorn cock—	
	(1) F. N. Smiley & Son, Milligan, Ind.	1 50
	(2) W. O. Swain, Manilla, Ind.	75
524.	R. C. White Leghorn hen—	
	(1) F. N. Smiley & Son, Milligan, Ind.	1 50
	(2) F. N. Smiley & Son, Milligan, Ind.	75
525.	R. C. White Leghorn cockerel—	
	(1) W. O. Swain, Manilla, Ind.	1 50
	(2) C. E. & W. Smith, Ashley, O.	75

526. R. C. White Leghorn pullet—	
(1) C. E. & W. Smith, Ashley, O.	2 00
(2) W. O. Swain, Manilla, Ind.	1 00
527. R. C. White Leghorn pen—	
(1) F. N. Smiley & Son, Milligan, Ind.	4 00
(2) C. E. & W. Smith, Ashley, O.	2 00
528. S. C. Brown Leghorn cock—	
(1) J. J. Burnside, Milligan, Ind.	2 00
(2) W. O. Swain, Manilla, Ind.	1 00
529. S. C. Brown Leghorn hen—	
(1) J. J. Burnside, Milligan, Ind.	2 00
(2) E. B. Murphy, Carmel, Ind.	1 00
530. S. C. Brown Leghorn cockerel—	
(1) E. B. Murphy, Carmel, Ind.	2 00
(2) E. B. Murphy, Carmel, Ind.	1 00
531. S. C. Brown Leghorn pullet—	
(1) E. B. Murphy, Carmel, Ind.	2 00
(2) E. B. Murphy, Carmel, Ind.	1 00
532. S. C. Brown Leghorn pen—	
(1) E. B. Murphy, Carmel, Ind.	4 00
(2) J. J. Burnside, Milligan, Ind.	2 00
533. R. C. Brown Leghorn cock—	
(1) F. N. Smiley & Son, Milligan, Ind.	1 50
(2) F. N. Smiley & Son, Milligan, Ind.	75
534. R. C. Brown Leghorn hen—	
(1) F. N. Smiley & Son, Milligan, Ind.	1 50
(2) F. N. Smiley & Son, Milligan, Ind.	75
535. R. C. Brown Leghorn cockerel—	
(1) C. E. & W. Smith, Ashley, O.	1 50
(2) Collins Bros., Bainbridge, Ind.	75
536. R. C. Brown Leghorn pullet—	
(1) C. E. & W. Smith, Ashley, O.	1 50
(2) C. E. & W. Smith, Ashley, O.	75
537. R. C. Brown Leghorn pen—	
(1) C. E. & W. Smith, Ashley, O.	4 00
(2) F. N. Smiley & Son, Milligan, Ind.	2 00
538. S. C. Buff Leghorn cock—	
(1) C. H. Bell, Ashley, O.	1 50
539. S. C. Buff Leghorn hen—	
(1) C. H. Bell, Ashley, O.	1 50
(2) C. H. Bell, Ashley, O.	75
540. S. C. Buff Leghorn cockerel—	
(1) C. H. Bell, Ashley, O.	1 50
(2) C. H. Bell, Ashley, O.	75

541.	S. C. Buff Leghorn pullet—	
	(1) C. H. Bell, Ashley, O.	1 50
	(2) C. H. Bell, Ashley, O.	75
542.	S. C. Buff Leghorn pen—	
	(1) C. H. Bell, Ashley, O.	4 00

HOUDANS.

543.	Houdan cock—	
	(1) T. H. Buck, Morristown, Ind.	2 00
	(2) C. E. & W. Smith, Ashley, O.	1 00
544.	Houdan hen—	
	(1) C. E. & W. Smith, Ashley, O.	2 00
	(2) C. E. & W. Smith, Ashley, O.	1 00
545.	Houdan cockerel—	
	(1) C. E. & W. Smith, Ashley, O.	2 00
546.	Houdan pullet—	
	(1) C. E. & W. Smith, Ashley, O.	2 00
547.	Houdan pen—	
	(1) C. E. & W. Smith, Ashley, O.	4 00
	(2) T. H. Buck, Morristown, Ind.	2 00

BLACK SPANISH.

548.	Black Spanish cock—	
	(1) A. M. Acra, Burlington, Ky.	2 00
	(2) A. M. Acra, Burlington, Ky.	1 00
549.	Black Spanish hen—	
	(1) J. H. Evan, Greenfield, Ind.	2 00
	(2) George Ewald, Cincinnati, O.	1 00
550.	Black Spanish cockerel—	
	(1) A. M. Acra, Burlington, Ky.	2 00
	(2) J. H. Evan, Greenfield, Ind.	1 00
551.	Black Spanish pullet—	
	(1) A. M. Acra, Burlington, Ky.	2 00
	(2) J. H. Evan, Greenfield, Ind.	1 00
552.	Black Spanish pen—	
	(1) J. H. Evan, Greenfield, Ind.	4 00
	(2) C. E. & W. Smith, Ashley, O.	2 00

MINORCAS.

553.	Black Minorca cock—	
	(1) Louis Clem, Bunker Hill, Ind.	2 00
	(2) C. E. & W. Smith, Ashley, O.	1 00
554.	Black Minorca hen—	
	(1) W. O. Swain, Manilla, Ind.	2 00
	(2) Louis Clem, Bunker Hill, Ind.	1 00

555. Black Minorca cockerel—	
(1) Louis Clem, Bunker Hill, Ind	2 00
(2) C. E. & W. Smith, Ashley, O	1 00
556. Black Minorca pullet—	
(1) C. E. & W. Smith, Ashley, O	2 00
(2) Louis Clem, Bunker Hill, Ind	1 00
557. Black Minorca pen—	
(1) Louis Clem, Bunker Hill, Ind	4 00
(2) C. E. & W. Smith, Ashley, O	2 00
558. White Minorca cock—	
(1) J. J. Burnside, Milligan, Ind	1 50
559. White Minorca hen—	
(1) J. J. Burnside, Milligan, Ind	1 50
(2) J. J. Burnside, Milligan, Ind	75
560. White Minorca cockerel—	
(1) J. J. Burnside, Milligan, Ind	1 50
(2) J. H. Evan, Greenfield, Ind	75
561. White Minorca pullet—	
562. White Minorca pen—	
(1) J. J. Burnside, Milligan, Ind	4 00
(2) J. H. Evan, Greenfield, Ind	2 00

HAMBURG.

563. Silver-spangled cock—	
(1) B. F. Hill, Indianapolis, Ind	2 00
(2) F. N. Smiley & Son, Milligan, Ind	1 00
564. Silver-spangled hen—	
(1) A. M. Acra, Burlington, Ky	2 00
(2) A. M. Acra, Burlington, Ky	1 00
565. Silver-spangled cockerel—	
(1) B. F. Hill, Indianapolis, Ind	2 00
(2) B. F. Hill, Indianapolis, Ind	1 00
566. Silver-spangled pullet—	
(1) Henry C. Forgey, Crawfordsville, Ind	3 00
(2) Collins Bros., Bainbridge, Ind	1 00
567. Silver-spangled pen—	
(1) B. F. Hill, Indianapolis, Ind	4 00
(2) F. N. Smiley & Son, Milligan, Ind	3 00

POLISH.

568. White-crested Black cock—	
(1) George Ewald, Cincinnati, O	1 50
(2) T. H. Buck, Morristown, Ind	75

569. White-crested Black hen—	
(1) George Ewald, Cincinnati, O	1 50
(2) T. H. Buck, Morristown, Ind	75
570. White-crested Black cockerel—	
(1) George Ewald, Cincinnati, O	1 50
(2) T. H. Buck, Morristown, Ind	75
571. White-crested Black pullet—	
(1) George Ewald, Cincinnati, O	1 50
(2) George Ewald, Cincinnati, O	75
572. White-crested Black pen—	
(1) George Ewald, Cincinnati, O	3 00
(2) T. H. Buck, Morristown, Ind	1 50
573. Silver polish cock—	
(1) T. H. Buck, Morristown, Ind	1 50
(2) George Ewald, Cincinnati, O	75
574. Silver Polish hen—	
(1) T. H. Buck, Morristown, Ind	1 50
(2) T. H. Buck, Morristown, Ind	75
575. Silver Polish cockerel—	
(1) George Ewald, Cincinnati, O	1 50
(2) T. H. Buck, Morristown, Ind	75
576. Silver Polish pullet—	
(1) George Ewald, Cincinnati, O	1 50
(2) T. H. Buck, Morristown, Ind	75
577. Silver Polish pen—	
(1) T. H. Buck, Morristown, Ind	2 00
(2) George Ewald, Cincinnati, O	1 50

DORKINGS.

578. Silver Gray cock—	
(1) T. M. Campbell, Darlington, Ind	1 50
(2) C. E. & W. Smith, Ashley, O	75
579. Silver Gray hen—	
(1) T. M. Campbell, Darlington, Ind	1 50
(2) C. E. & W. Smith, Ashley, O	75
580. Silver Gray cockerel—	
(1) C. E. & W. Smith, Ashley, O	1 50
(2) C. E. & W. Smith, Ashley, O	75
581. Silver Gray pullet—	
(1) C. E. & W. Smith, Ashley, O	1 50
(2) T. M. Campbell, Darlington, Ind	75
582. Silver Gray pen—	
(1) C. E. & W. Smith, Ashley, O	4 00
(2) T. M. Campbell, Darlington, Ind	2 00

GAME.

583. Black-breasted Red cock—	
(1) Wesley Lanius, Greensburg, Ind.	1 50
(2) Warbritton Bros., Ladoga, Ind.	75
584. Black-breasted Red hen—	
(1) Wesley Lanius, Greensburg, Ind.	1 50
(2) Wesley Lanius, Greensburg, Ind.	75
585. Black-breasted Red cockerel—	
(1) Wesley Lanius, Greensburg, Ind.	1 50
(2) Wesley Lanius, Greensburg, Ind.	75
586. Black-breasted Red pullet—	
(1) Wesley Lanius, Greensburg, Ind.	1 50
(2) Wesley Lanius, Greensburg, Ind.	75
587. Black-breasted Red pen—	
(1) Wesley Lanius, Greensburg, Ind.	3 00
(2) Wesley Lanius, Greensburg, Ind.	1 50
588. Indian Game cock—	
(1) Wesley Lanius, Greensburg, Ind.	1 50
(2) J. H. Evan, Greenfield, Ind.	75
589. Indian Game hen—	
(1) Wesley Lanius, Greensburg, Ind.	1 50
(2) Anscel D. Woods, Louisville, Ky.	75
590. Indian Game cockerel—	
(1) Wesley Lanius, Greensburg, Ind.	1 50
(2) C. E. & W. Smith, Ashley, O.	75
591. Indian Game pullet—	
(1) Wesley Lanius, Greensburg, Ind.	1 50
(2) C. E. & W. Smith, Ashley, O.	75
592. Indian Game pen—	
(1) Wesley Lanius, Greensburg, Ind.	3 00
(2) C. E. & W. Smith, Ashley, O.	1 50

GAME BANTAMS.

593. Black-breasted Red cock—	
(1) Nicholas & Hoss, Indianapolis, Ind.	1 50
(2) George Ewald, Cincinnati, O.	75
594. Black-breasted Red hen—	
(1) George Ewald, Cincinnati, O.	1 50
(2) J. A. Horning, Shelbyville, Ind.	75
595. Black-breasted Red cockerel—	
(1) George Ewald, Cincinnati, O.	1 50
(2) Mrs. W. S. Day, Indianapolis, Ind.	75
596. Black-breasted Red pullet—	
(1) T. M. Campbell, Darlington, Ind.	1 50
(2) J. A. Horning, Shelbyville, Ind.	75

597. Black-breasted Red pen—	
(1) George Ewald, Cincinnati, O.	3 00
(2) Nichlos & Hoss, Indianapolis, Ind.	1 50
598. Silver Duckwing cock—	
(1) George Ewald, Cincinnati, O.	1 50
(2) J. A. Horning, Shelbyville, Ind.	75
599. Silver Duckwing hen—	
(1) George Ewald, Cincinnati, O.	1 50
(2) George Ewald, Cincinnati, O.	75
600. Silver Duckwing cockerel—	
(1) C. E. & W. Smith, Ashley, O.	1 50
(2) George Ewald, Cincinnati, O.	75
601. Silver Duckwing pullet—	
(1) George Ewald, Cincinnati, O.	1 50
(2) George Ewald, Cincinnati, O.	75
602. Silver Duckwing pen—	
(1) George Ewald, Cincinnati, O.	3 00
(2) B. F. Duncan, Greenfield, Ind.	1 50
602. Red Pyle cock—	
(1) Geo. Ewald, Cincinnati, Ohio.	1 50
(2) Wesley Lanius, Greensburg, Ind.	75
604. Red Pyle hen—	
(1) Geo. Ewald, Cincinnati, Ohio.	1 50
(2) Geo. Ewald, Cincinnati, Ohio.	75
605. Red Pyle cockerel—	
(1) Wesley Lanius, Greensburg, Ind.	1 50
(2) C. E. & W. Smith, Ashley, Ohio.	75
606. Red Pyle pullet—	
(1) T. M. Campbell, Darlington, Ind.	1 50
(2) T. M. Campbell, Darlington, Ind.	75
607. Red Pyle pen—	
(1) Geo. Ewald, Cincinnati, Ohio.	3 00
(2) T. M. Campbell, Darlington, Ind.	1 50

BANTAM OTHER THAN GAME.

608. Golden Seabright cock—	
(1) T. M. Campbell, Darlington, Ind.	1 50
(2) T. M. Campbell, Darlington, Ind.	75
609. Golden Seabright hen—	
(1) Geo. Ewald, Cincinnati, Ohio.	1 50
(2) T. E. & W. Smith, Ashley, Ohio.	75
610. Golden Seabright cockerel—	
(1) T. M. Campbell, Darlington, Ind.	1 50
(2) Mrs. R. W. Williams, Indianapolis, Ind.	75

611. Golden Seabright pullet—	
(1) Geo. Ewald, Cincinnati, Ohio	1 50
(2) Mrs. R. W. Williams, Indianapolis, Ind	75
612. Golden Seabright pen—	
(1) Geo. Ewald, Cincinnati, Ohio	3 00
(2) T. M. Campbell, Darlington, Ind	1 50
613. Silver Seabright cock—	
(1) Geo. Ewald, Cincinnati, Ohio	1 50
(2) T. M. Campbell, Darlington, Ind	75
614. Silver Seabright hen—	
(1) T. M. Campbell, Darlington, Ind	1 50
(2) T. M. Campbell, Darlington, Ind	75
615. Silver Seabright cockerel—	
(1) Mrs. R. W. Williams, Indianapolis, Ind	1 50
616. Silver Seabright pullet—	
(1) Mrs. R. W. Williams, Indianapolis, Ind	1 50
(2) Geo. Ewald, Cincinnati, Ohio	75
617. Silver Seabright pen—	
(1) T. M. Campbell, Darlington, Ind	3 00
(2) Geo. Ewald, Cincinnati, Ohio	1 50
618. R. C. B. African cock—	
(1) Geo. Ewald, Cincinnati, Ohio	1 50
(2) Geo. Ewald, Cincinnati, Ohio	75
619. R. C. B. African hen—	
(1) Geo. Ewald, Cincinnati, Ohio	1 50
(2) Geo. Ewald, Cincinnati, Ohio	75
620. R. C. B. African cockerel—	
(1) Geo. Ewald, Cincinnati, Ohio	1 50
621. R. C. B. African pullet—	
(1) Geo. Ewald, Cincinnati, Ohio	1 50
622. R. C. B. African pen—	
(1) Geo. Ewald, Cincinnati, Ohio	3 00
623. Buff Cochin cock—	
(1) Geo. Ewald, Cincinnati, Ohio	1 50
(2) W. A. Graffis, Logansport, Ind	75
624. Buff Cochin hen—	
(1) Geo. Ewald, Cincinnati, Ohio	150
(2) Geo. Ewald, Cincinnati, Ohio	75
625. Buff Cochin cockerel—	
(1) W. A. Graffis, Logansport, Ind	1 50
(2) Wm. Grose, Middletown, Ind	75
626. Buff Cochin pullet—	
(1) T. M. Campbell, Darlington, Ind	1 50
(2) W. A. Graffis, Logansport, Ind	75

627. Buff Cochin pen—	
(1) Geo. Ewald, Cincinnati, Ohio	3 00
(2) W. A. Graffis, Logansport, Ind	1 50

TURKEYS.

628. Bronze cock—	
(1) G. W. Wilkins, New Lancaster, Ind	2 00
(2) R. W. Matthew, Boggstown, Ind	1 00
629. Bronze hen—	
(1) G. W. Wilkins, New Lancaster, Ind	2 00
(2) G. W. Wilkins, Boggstown, Ind	1 00
630. Bronze cockerel—	
(1) John Smiley & Son, Milligan, Ind	2 00
(2) C. H. Bell, Ashley, Ohio	1 00
631. Bronze pullet—	
(1) John Smiley & Son, Milligan, Ind	2 00
(2) C. H. Bell, Ashley, Ohio	1 00
632. White Holland cock—	
(1) John Smiley & Son, Milligan, Ind	2 00
(2) J. A. Horning, Shelbyville, Ind	1 00
633. White Holland hen—	
(1) J. A. Horning, Shelbyville, Ind	2 00
(2) John Smiley & Son, Milligan, Ind	1 00
634. White Holland cockerel—	
(1) John Smiley & Son, Milligan, Ind	2 00
(2) C. H. Bell, Ashley, Ohio	2 00

GEESE.

636. Pair Toulouse, old—	
(1) J. A. Horning, Shelbyville, Ind	3 00
637. Pair Toulouse, young—	
(1) J. A. Horning, Shelbyville, Ind	3 00
638. Pair Embden, old—	
(1) C. H. Bell, Ashley, Ohio	3 00
(2) John Smiley & Son, Milligan, Ind	1 50
639. Pair Embden, young—	
(1) C. H. Bell, Ashley, Ohio	3 00
(2) John Smiley & Son, Milligan, Ind	1 50
640. Pair Chinese, old—	
(1) B. F. Duncan, Greenfield, Ind	2 00
(2) J. A. Horning, Shelbyville, Ind	1 00
641. Pair Chinese, young—	
(1) Lewis Harrison, Broad Ripple, Ind	2 00

DUCKS.

642.	Pair Pekin, old—	
	(1) C. E. & W. Smith, Ashley, Ohio	3 00
	(2) Indiana Poultry Farm, Indianapolis, Ind	2 00
643.	Pair Pekin, young—	
	(1) Indiana Poultry Farm, Indianapolis, Ind	3 00
	(2) Indiana Poultry Farm, Indianapolis, Ind	2 00
644.	Pair Aylesbury, old—	
	(1) T. M. Campbell, Darlington, Ind	3 00
	(2) T. M. Campbell, Darlington, Ind	2 00
645.	Pair Aylesbury, young—	
	(1) T. M. Campbell, Darlington, Ind	3 00
	(2) T. M. Campbell, Darlington, Ind	2 00
646.	Pair Rouen, old—	
	(1) C. E. & W. Smith, Ashley, Ohio	2 00
	(2) John Smiley & Son, Milligan, Ind	1 00
647.	Pair Rouen, young—	
	(1) J. A. Horning, Shelbyville, Ind	2 00
	(2) Collins Bros., Bainbridge, Ind	1 00

PIGEONS.

643.	Best display, not to be less than 10 pairs of 10 different varieties, all pure bred—	
	(1) Geo. Ewald, Cincinnati, Ohio	10 00
	(2) Geo. Ewald, Cincinnati, Ohio	5 00

CLASS XLI—Belgian Hares.

(J. W. Alvis, Indianapolis, Judge.)

IMPORTED, RUFUS RED.

649.	Mature buck—	
	(1) F. M. Cory, Shelbyville, Ind	$3 00
	(2) Leroy R. Crampton, Muncie, Ind	2 00
650.	Mature doe—	
	(1) F. M. Cory, Shelbyville, Ind	3 00
	(2) C. S. Byers, Hazelrigg, Ind	2 00
	(3) Leroy R. Crampton, Muncie, Ind	1 00
651.	Immature buck—	
652.	Immature doe—	
653.	Breeding hutch—	
	(1) F. M. Cory, Shelbyville, Ind	3 00

654.	Mature buck—	
	(1) Edw. A. Ditcrich, Indianapolis, Ind	3 00
	(2) Hoosier Bel. Hare Co., Indianapolis, Ind	2 00
	(3) T. E. Smith, Muncie, Ind	1 00
655.	Mature doe—	
	(1) Edw. A. Ditcrich, Indianapolis, Ind	3 00
	(2) C. S. Byers, Hazelrigg, Ind	2 00
	(3) Hoosier Bel. Hare Co., Indianapolis, Ind	1 00
656.	Immature buck—	
	(1) T. E. Smith, Muncie, Ind	3 00
	(2) F. M. Cory, Shelbyville, Ind	2 00
	(3) T. E. Smith, Muncie, Ind	1 00
657.	Immature doe—	
	(1) T. E. Smith, Muncie, Ind	3 00
	(2) F. M. Cory, Shelbyville, Ind	2 00
	(3) Edw. A. Ditcrich, Indianapolis, Ind	1 00
658.	Breeding hutch—	
	(1) Leroy R. Crampton, Muncie, Ind	3 00
	(2) T. E. Smith, Muncie, Ind	2 00
	(3) Edw. A. Ditcrich, Indianapolis, Ind	1 00

DOMESTIC BLACK.

659.	Mature buck—	
660.	Mature doe—	
	(1) T. E. Smith, Muncie, Ind	3 00
661.	Immature buck—	
	(1) T. E. Smith, Muncie, Ind	3 00
	(2) Leroy R. Crampton, Muncie, Ind	2 00
662.	Immature doe—	
	(1) T. E. Smith, Muncie, Ind	3 00
	(2) Leroy R. Crampton, Muncie, Ind	2 00
663.	Breeding hutch—	

FLEMISH GIANTS.

664.	Mature buck—	
665.	Mature doe—	
	(1) T. E. Smith, Muncie, Ind	3 00
	(2) Leroy R. Crampton, Muncie, Ind	2 00
666.	Immature buck—	
667.	Immature doe—	
668.	Breeding hutch—	

DOMESTIC WHITE.

669. Buck, mature—
670. Buck, immature—
671. Doe, mature—
672. Doe, immature—
673. Breeding hutch—

CLASS XLII—Agricultural—Grain and Seeds.

(A. D. Shomel, Urbana, Ill., Judge.)

674.	20 ears yellow corn—	
	(1) J. R. Talbert, Kokomo, Ind.	$6 00
675.	20 ears white corn—	
676.	20 ears any other variety—	

CENTRAL DIVISION OF INDIANA.

677.	20 ears yellow corn—	
	(1) Henry Benet, Franklin, Ind.	6 00
	(2) Chas. A. Brown, Franklin, Ind.	4 00
	(3) Lunis Sanford, Greenfield, Ind.	2 00
678.	20 ears white corn—	
	(1) Joe R. Overstreet, Franklin, Ind.	6 00
	(2) Chas. A. Brown, Franklin, Ind.	4 00
	(3) J. D. Whitesides, Franklin, Ind.	2 00
679.	20 ears of any other variety of corn—	
	(1) J. D. Whitesides, Franklin, Ind.	6 00
	(2) J. D. Whitesides, Franklin, Ind.	4 00
	(3) Joe. R. Overstreet, Franklin, Ind.	2 00

SOUTHERN DIVISION OF INDIANA.

680.	20 ears yellow corn—	
	(1) Joe. R. Overstreet, Franklin, Ind.	6 00
681.	20 ears white corn—	
	(1) Joe. R. Overstreet, Franklin, Ind.	6 00
683.	20 ears of any other variety of corn—	
	(1)	6 00
	(2)	4 00
	(3)	2 00

OPEN TO THE WORLD.

683.	20 ears yellow corn—	
	(1) L. B. Clore, Franklin, Ind.	6 00
	(2) Whipps Bros., Marion, Ohio	4 00
	(3) Chas. A. Brown, Franklin, Ind.	2 00

684. 20 ears white corn—	
(1) Joe R. Overstreet, Franklin, Ind	6 00
(2) J. D. Whitesides, Franklin, Ind	4 00
(3) L. B. Clore, Franklin, Ind	2 00
685. 20 ears any other variety of corn—	
(1) J. D. Whitesides, Franklin, Ind	6 00
(2) J. D. Whitesides, Franklin, Ind	4 00
(3) Joe R. Overstreet, Franklin, Ind	2 00
686. 20 ears white flint hominy corn—	
(1) Whipps Bros., Marion, Ohio	5 00
(2) L. B. Clore, Franklin, Ind	2 00
687. One peck white rice popcorn—	
(1) John Marvel, Royalton, Ind	2 00
(2) Joe R. Overstreet, Franklin, Ind	1 00
688. One peck golden popcorn—	
(1) J. L. Keckley, Marysville, Ohio	2 00
(2) J. R. Overstreet, Franklin, Ind	1 00
689. One peck any other variety of popcorn—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) John Marvel, Royalton, Ind	1 00
690. Best display and variety of corn not less than twenty varieties, six ears each variety, properly named and labeled--	
(1) Clore & Overstreet, Franklin, Ind	60 00
(2) J. D. Whitesides, Franklin, Ind	40 00
(3) Clore & Overstreet, Franklin, Ind	20 00
691. Best ½ bushel white winter wheat—	
(1) Whipps Bros., Marion, Ohio	4 00
(2) Whipps Bros., Marion, Ohio	2 00
692. Best ½ bushel red winter wheat—	
(1) J. L. Keckley, Marysville, Ohio	4 00
(2) L. B. Clore, Franklin, Ind	2 00
693. Best ½ bushel Fultz wheat—	
(1) L. B. Clore, Franklin, Ind	4 00
(2) J. L. Keckley, Marysville, Ohio	2 00
694. Best ½ bushel red spring wheat—	
(1) J. L. Keckley, Marysville, Ohio	4 00
(2) Geo. M. Rumler, Mohawk, Ind	2 00
695. Best display of grain in the straw, not less than ten varieties, properly named and labeled—	
(1) J. L. Keckley, Marysville, Ohio	10 00
(2) Whipps Bros., Marion, Ohio	5 00
696. Best display of meadow and pasture grasses, including cereals and clover, not less than twenty varieties, properly named and labeled—	
(1) Whipps Bros., Marion, Ohio	8 00
(2) J. L. Keckley, Marysville, Ohio	4 00

697.	½ bushel rye—	
	(1) J. L. Keckley, Marysville, Ohio	2 00
	(2) J. L. Keckley, Marysville, Ohio	1 00
698.	½ bushel white oats—	
	(1) Geo. M. Rumler, Mohawk, Ind	2 00
	(2) J. L. Keckley, Marysville, Ohio	1 00
699.	½ bushel black oats—	
	(1) J. L. Keckley, Marysville, Ohio	2 00
	(2) Whipps Bros., Marion, Ohio	1 00
700.	½ bushel silver hull buckwheat—	
	(1) J. L. Keckley, Marysville, Ohio	2 00
	(2) Whipps Bros., Marion, Ohio	1 00
701.	½ bushel barley—	
	(1) J. L. Keckley, Marysville, Ohio	2 00
	(2) Geo. M. Rumler, Mohawk, Ind	1 00
702.	½ bushel millet seed—	
	(1) Geo. M. Rumler, Mohawk, Ind	2 00
	(2) Whipps Bros., Marion, Ohio	1 00
703.	½ bushel timothy seed—	
	(1) Geo. M. Rumler, Mohawk, Ind	2 00
	(2) Geo. M. Rumler, Mohawk, Ind	1 00
704.	½ bushel orchard grass seed—	
	(1) Geo. M. Rumler, Mohawk, Ind	2 00
	(2) Geo. M. Rumler, Mohawk, Ind	1 00
705.	½ bushel Hungarian grass seed—	
	(1) J. L. Keckley, Marysville, Ohio	2 00
	(2) J. L. Keckley, Marysville, Ohio	1 00
706.	½ bushel Kentucky bluegrass seed—	
	(1) J. L. Keckley, Marysville, Ohio	2 00
	(2) J. L. Keckley, Marysville, Ohio	1 00
707.	½ bushel Mammoth clover seed—	
	(1) John Marvel, Royalton, Ind	2 00
	(2) Whipps Bros., Marion, Ohio	1 00
708.	½ bushel red clover seed—	
	(1) Whipps Bros., Marion, Ohio	2 00
	(2) Whipps Bros., Marion, Ohio	1 00
709.	½ bushel flaxseed—	
	(1) Geo. M. Rumler, Mohawk, Ind	2 00
	(2) John Marvel, Royalton, Ind	1 00
710.	Best collection of grain and seed shown by exhibitor, seed of 1901—	
	(1) J. L. Keckley, Marysville, Ohio	10 00
	(2) John Marvel, Royalton, Ind	5 00

711.	Best display and collection of farm products, by any county or society in Indiana—	
	(1) J. D. Whitesides, Franklin, Ind	60 00
	(2) John Marvel, Royalton, Ind	30 00

CLASS XLIII—Vegetables.

(Ira B. Hurst, Wagoner, Ind., Judge.)

712.	Three white egg plant—	
	(1) Whipps Bros., Marion, Ohio	$2 00
713.	Three New York purple egg plant—	
	(1) Whipps Bros., Marion, Ohio	2 00
	(2) J. D. Whitesides, Franklin, Ind	1 00
	(3) Mrs. Martha Luking, Bicknell, Ind	50
714.	Twelve best cucumbers—	
	(1) Whipps Bros., Marion, Ohio	2 00
	(2) J. D. Whitesides, Franklin, Ind	1 00
715.	Six cauliflowers—	
	(1) Whipps Bros., Marion, Ohio	2 00
716.	Twelve ears late sweet corn—	
	(1) Whipps Bros., Marion, Ohio	2 00
	(2) J. L. Keckley, Marysville, Ohio	1 00
717.	Twelve ears early sweet corn—	
	(1) J. L. Keckley, Marysville, Ohio	2 00
	(2) Whipps Bros., Marion, Ohio	1 00
718.	Three Hubbard squash—	
	(1) Whipps Bros., Marion, Ohio	2 00
	(2) Whipps Bros., Marion, Ohio	1 00
	(3) J. L. Keckley, Marysville, Ohio	50
719.	Three Boston marrow squash—	
	(1) J. L. Keckley, Marysville, Ohio	2 00
720.	Three Marblehead squash—	
721.	Three Red Hubbard squash—	
	(1) J. L. Keckley, Marysville, Ohio	2 00
722.	Three Kershaw squash—	
	(1) J. D. Whitesides, Franklin, Ind	2 00
	(2) J. D. Whitesides, Franklin, Ind	1 00
	(3) Harry Bennett, Franklin, Ind	50
723.	Three Summer Crooked Neck squash—	
	(1) Whipps Bros., Marion, Ohio	2 00
	(2) Harry Bennett, Franklin, Ind	1 00
	(3) Whipps Bros., Franklin, Ind	50

724. Three field pumpkins—	
(1) J. D. Whitesides, Franklin, Ind.	2 00
(2) J. D. Whitesides, Franklin, Ind.	1 00
(3) John Marvel, Royalton, Ind.	50
725. Largest squash—	
726. Largest pumpkin—	
(1) J. D. Whitesides, Franklin, Ind.	2 00
(2) J. D. Whitesides, Franklin, Ind.	1 00
727. Six Drumhead cabbage—	
(1) J. L. Keckley, Marysville, Ohio	2 00
728. Six Flat Dutch cabbage—	
(1) J. L. Keckley, Marysville, Ohio	2 00
729. Six early cabbage—	
(1) Whipps Bros., Marion, Ohio	2 00
730. Six red cabbage—	
(1) Whipps Bros., Marion, Ohio	2 00
731. Twelve stalks of celery—	
(1) Whipps Bros., Marion, Ohio	2 00
733. One-half peck Lima beans, germ shell—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) John Marvel, Royalton, Ind.	1 00
734. One-half peck white Marrowfat beans—	
(1) Whipps Bros., Marion, O.	2 00
(2) Geo. M. Rumler, Mohawk, Ind.	1 00
735. One-half peck white Navy beans—	
(1) Whipps Bros., Marion, O.	2 00
(2) Geo. M. Rumler, Mohawk, Ind.	1 00
(3) Harry Bennett, Franklin, Ind.	50
736. One-half peck colored Kidney beans—	
(1) Harry Bennett, Franklin, Ind.	2 00
(2) Geo. M. Rumler, Mohawk, Ind.	1 00
(3) Whipps Bros., Marion, O.	50
737. One-half peck white Kidney beans—	
(1) J. L. Keckley, Marysville, O.	2 00
738. One-half peck garden peas, dry—	
(1) Whipps Bros., Marion, O.	2 00
(2) J. L. Keckley, Marysville, O.	1 00
(3) John Marvel, Royalton, Ind.	50
739. Best peck purple tomatoes—	
740. Best peck red tomatoes—	
(1) Jas. A. Norwood, Southport, Ind.	2 00
(2) Harry Bennett, Franklin, Ind.	1 00
(3) Wm. Edmonds, Indianapolis, Ind.	50

743.	Six largest and best nutmeg melons—	
	(1) Whipps Bros., Marion, Ohio	2 00
	(2) J. L. Keckley, Marysville, Ohio	1 00
	(3) Jas. A. Norwood, Southport, Ind	50
744.	Six largest and best musk melons—	
	(1) Jas. A. Norwood, Southport, Ind	2 00
748.	Display musk melons, not less than six varieties—	
	(1) J. L. Keckley, Marysville, Ohio	2 00
750.	Largest and best collection of vegetables—	
	(1) Whipps Bros., Marion, Ohio	15 00
	(2) J. L. Keckley, Marysville, Ohio	10 00
	(3) Harry Bennett, Franklin, Ind	5 00
751.	Peck peppers for pickling—	
	(1) W. B. Flick, Lawrence, Ind	2 00
	(2) Mrs. Martha Luking, Bicknell, Ind	1 00
752.	Display of peppers—	
	(1) John Marvel, Royalton, Ind	2 00

CLASS XLIV—Root Crop.

(Ira B. Hurst, Wagoner, Ind., Judge.)

753.	Six purple top turnips—	
	(1) R. D. Williamson, Xenia, Ohio	$2 00
754.	Six any other variety turnips—	
755.	Six carrots for table—	
	(1) J. D. Whitesides, Franklin, Ind	2 00
	(2) J. D. Whitesides, Franklin, Ind	1 00
	(3) Harry Bennett, Franklin, Ind	50
756.	Six carrots for stock—	
	(1) J. D. Whitesides, Franklin, Ind	2 00
	(2) J. D. Whitesides, Franklin, Ind	1 00
	(3) Harry Bennett, Franklin, Ind	50
757.	Six roots salsify—	
758.	Six roots horseradish—	
	(1) J. L. Keckley, Marysville, Ohio	2 00
	(2) R. D. Williamson, Xenia, Ohio	1 00
759.	Six long red table beet—	
	(1) J. D. Whitesides, Franklin, Ind	2 00
	(2) J. D. Whitesides, Franklin, Ind	1 00
	(3) Harry Bennett, Franklin, Ind	50
760.	Six turnip beet—	
	(1) J. D. Whitesides, Franklin, Ind	2 00
	(2) John Marvel, Royalton, Ind	1 00
	(3) J. D. Whitesides, Franklin, Ind	50

761. Six sugar beets—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) Whipps Bros., Marion, Ohio	1 00
(3) J. D. Whitesides, Franklin, Ind	50
762. Six red mangelwurzel—	
(1) J. L. Keckley, Marysville, Ohio	2 00
(2) Harry Bennett, Franklin, Ind	1 00
(3) J. D. Whitesides, Franklin, Ind	50
763. Six parsnips—	
(1) R. D. Williamson, Xenia, Ohio	2 00
(2) R. D. Williamson, Xenia, Ohio	1 00
(3) J. D. Whitesides, Franklin, Ind	50
764. Six turnip radish, same kind—	
(1) J. D. Whitesides, Franklin, Ind	2 00
(2) Harry Bennett, Franklin, Ind	1 00
(3) J. D. Whitesides, Franklin, Ind	50
765. Six winter radish—	
(1) J. D. Whitesides, Franklin, Ind	2 00
(2) Harry Bennett, Franklin, Ind	1 00
(3) Harry Bennett, Franklin, Ind	50
766. Six long summer radishes—	
(1) Lunis Sanford, Greenfield, Ind	2 00
(2) J. L. Keckley, Marysville, Ohio	1 00
(3) John Marvel, Royalton, Ind	50
767. Peck of Prize-Taker onions—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) Whipps Bros., Marion, Ohio	1 00
768. Peck Yellow Globe onions—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) Whipps Bros., Marion, Ohio	1 00
769. Peck White Globe onions—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) J. L. Keckley, Marysville, Ohio	1 00
770. One-half peck yellow onion sets—	
(1) J. D. Whitesides, Franklin, Ind	2 00
771. One-half peck red onion sets—	
(1) J. D. Whitesides, Franklin, Ind	2 00
772. One-half peck white onion sets—	
(1) J. D. Whitesides, Franklin, Ind	2 00
773. Broom corn—	
(1) John Marvel, Royalton, Ind	2 00
(2) John Marvel, Royalton, Ind	1 00
(3) Mrs. Martha Luking, Bicknell, Ind	50

774. Potato onions—	
(1) J. D. Whitesides, Franklin, Ind	2 00
(2) J. D. Whitesides, Franklin, Ind	1 00
(3) Mrs. Martha Luking, Bicknell, Ind	50
775. Yellow Danvers onions—	
(1) J. L. Keckley, Marysville, Ohio	2 00
776. Red Weatherfield onions—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) J. L. Keckley, Marysville, Ohio	1 00
777. Display of onions, all varieties—	
(1) Whipps Bros., Marion, Ohio	5 00
(2) J. L. Keckley, Marysville, Ohio	3 00
778. Largest and best display of root crops, all varieties, not less than six of each variety—	
(1) J. D. Whitesides, Franklin, Ind	5 00

CLASS XLV—Potatoes.

(Ira B. Hurst, Wagoner, Ind., Judge.)

779. Peck Early Rose—	
(1) J. L. Keckley, Marysville, Ohio	$2 00
(2) J. D. Whitesides, Franklin, Ind	1 00
(3) Whipps Bros., Marion, Ohio	50
780. Peck Early Ohio—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) J. D. Whitesides, Franklin, Ind	1 00
(3) Whipps Bros., Marion, Ohio	50
781. Peck Bliss Triumph—	
(1) J. L. Keckley, Marysville, Ohio	2 00
(2) Whipps Bros., Marion, Ohio	1 00
(3) Whipps Bros., Marion, Ohio	50
782. Peck Uncle Sam—	
(1) J. D. Whitesides, Franklin, Ind	2 00
(2) J. L. Keckley, Marysville, Ohio	1 00
(3) Whipps Bros., Marion, Ohio	50
783. Peck White Rose—	
784. Peck White Elephant—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) J. L. Keckley, Marysville, Ohio	1 00
785. Peck Beauty Hebron—	
(1) J. L. Keckley, Marysville, Ohio	2 00
(2) Whipps Bros., Marion, Ohio	1 00
(3) J. D. Whitesides, Franklin, Ind	50

786. Peck Rural New Yorker, No. 3—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) J. L. Keckley, Marysville, Ohio	1 00
(3) Harry Bennett, Franklin, Ind	50
787. Peck Queen of the West—	
(1) J. D. Whitesides, Franklin, Ind	2 00
(2) J. L. Keckley, Marysville, Ohio	1 00
(3) Harry Bennett, Franklin, Ind	50
788. Peck Empire State—	
(1) J. L. Keckley, Marysville, Ohio	2 00
789. Peck Green Mountain—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) J. L. Keckley, Marysville, Ohio	1 00
(3) Harry Bennett, Franklin, Ind	50
790. Peck Early Puritan—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) Whipps Bros., Marion, Ohio	1 00
(3) J. L. Keckley, Marysville, Ohio	50
791. Peck Early Harvest—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) J. L. Keckley, Marysville, Ohio	1 00
(3) J. D. Whitesides, Franklin, Ind	50
792. Peck Burbank Seedling—	
(1) J. L. Keckley, Marysville, Ohio	2 00
(2) Harry Bennett, Franklin, Ind	1 00
(3) J. D. Whitesides, Franklin, Ind	50
793. Peck Bovee—	
(1) J. L. Keckley, Marysville, Ohio	2 00
(2) Whipps Bros., Marion, Ohio	1 00
(3) Whipps Bros., Marion, Ohio	50
794. Peck Duchess—	
(1) J. D. Whitesides, Franklin, Ind	2 00
(2) J. L. Keckley, Marysville, Ohio	1 00
(3) Whipps Bros., Marion, Ohio	50
795. Largest and best collection of potatoes, one peck each variety—	
(1) Whipps Bros., Marion, Ohio	8 00
(2) J. L. Keckley, Marysville, Ohio	4 00
796. Yellow sweet potatoes—	
(1) Whipps Bros., Marion, Ohio	2 00
(2) J. L. Keckley, Marysville, Ohio	1 00
(3) J. D. Whitesides, Franklin, Ind	50
797. Peck red sweet potatoes—	
(1) Lunis Sanford, Greenfield, Ind	2 00
(2) Lunis Sanford, Greenfield, Ind	1 00
(3) J. D. Whitesides, Franklin, Ind	50

798.	Display of sweet potatoes—	
	(1) J. L. Keckley, Marysville, Ohio	5 00
	(2) Whipps Bros., Marion, Ohio	3 00

CLASS XLVI—Horticultural.

(W. C. Reed, Vincennes, Ind., Judge.)

APPLES—COLLECTIONS.

799.	Fifteen varieties for home use—	
	(1) B. F. Cole, Trafalgar, Ind	$15 00
	(2) Evan Swift, Franklin, Ind	10 00
800.	Ten varieties for market—	
	(1) Joe A. Burton, Orleans, Ind	10 00
	(2) Evan Swift, Franklin, Ind	6 00
801.	Five varieties for culinary purposes—	
	(1) Evan Swift, Franklin, Ind	5 00
	(2) Joe A. Burton, Orleans, Ind	3 00
802.	Plate Maiden Blush—	
	(1) Evan Swift, Franklin, Ind	1 50
	(2) W. D. Thomas, Connersville, Ind	1 00
803.	Plate Smith Cider—	
	(1) W. D. Thomas, Connersville, Ind	1 50
	(2) J. W. Daubenspeck, Mattsville, Ind	1 00
804.	Plate Ben Davis—	
	(1) Evan Swift, Franklin, Ind	1 50
	(2) W. D. Thomas, Connersville, Ind	1 00
805.	Plate Rome Beauty—	
	(1) Joe A. Burton, Orleans, Ind	1 50
	(2) Joe A. Burton, Orleans, Ind	1 00
806.	Plate Winesap—	
	(1) Joe A. Burton, Orleans, Ind	1 50
	(2) Joe A. Burton, Orleans, Ind	1 00
807.	Plate Rambo—	
	(1) Joel Clore, Franklin, Ind	1 50
	(2) B. F. Cole, Trafalgar, Ind	1 00
808.	Plate Yellow Bellflower—	
	(1) W. D. Thomas, Connersville, Ind	1 50
	(2) Reed & Fielding, Glenwood, Ind	1 00
809.	Plate Fallawater—	
	(1) Evan Swift, Franklin, Ind	1 50
	(2) Reed & Fielding, Glenwood, Ind	1 00
810.	Plate Fall Pipin—	
	(1) Joe A. Burton, Orleans, Ind	1 50
	(2) Reed & Fielding, Glenwood, Ind	1 00

811. Plate Willow Twig—	
(1) Joe A. Burton, Orleans, Ind.	1 50
(2) Joe A. Burton, Orleans, Ind.	1 00
812. Plate Westfield (Seek-no-Further)—	
(1) W. D. Thomas, Connersville, Ind.	1 50
(2) Reed & Fielding, Glenwood, Ind.	1 00
813. Plate Wagner—	
(1) F. M. Benham, Petoskey, Mich.	1 50
(2) C. P. Bradley, South Bend, Ind.	1 00
814. Plate Gravenstein—	
(1) B. F. Cole, Trafalgar, Ind.	1 50
(2) Hazel V. Stout, Trafalgar, Ind.	1 00
815. Plate Red Beitigheimer—	
816. Plate Fameuse or Snow—	
(1) B. F. Cole, Trafalgar, Ind.	1 50
(2) Evan Swift, Franklin, Ind.	1 00
817. Plate Moore Sweet—	
(1) B. F. Cole, Trafalgar, Ind.	1 50
(2) B. F. Flick, Lawrence, Ind.	1 00
818. Plate Tompkin's King—	
(1) Reed & Fielding, Glenwood, Ind.	1 50
(2) W. D. Thomas, Connersville, Ind.	1 00
819. Plate Hubbardston—	
(1) Reed & Fielding, Glenwood, Ind.	1 50
(2) Evan Swift, Franklin, Ind.	1 00
820. Plate Red Canada—	
(1) B. F. Cole, Trafalgar, Ind.	1 50
(2) J. Y. Demaree, Bud, Ind.	1 00
821. Plate Rhode Island Greening—	
(1) Reed & Fielding, Glenwood, Ind.	1 50
(2) W. D. Thomas, Connersville, Ind.	1 00
822. Plate Fall Wine—	
(1) Evan B. Davis, Cartersburg, Ind.	1 50
(2) Joel Clore, Franklin, Ind.	1 00
823. Plate Duchess—	
(1) B. F. Benham, Petoskey, Mich.	1 50
(2) B. F. Flick, Lawrence, Ind.	1 00
824. Plate Wolf River—	
(1) Evan Swift, Franklin, Ind.	1 50
825. Plate Yellow Transparent—	
(1) J. Y. Demaree, Bud, Ind.	1 50
(2) B. F. Flick, Lawrence, Ind.	1 00
826. Plate Clayton—	
(1) B. F. Cole, Trafalgar, Ind.	1 50
(2) Reed & Fielding, Glenwood, Ind.	1 00

827. Plate White Pippin—		
	(1) Reed & Fielding, Glenwood, Ind.	1 50
	(2) W. B. Flick, Lawrence, Ind.	1 00
828. Plate Baldwin—		
	(1) B. F. Cole, Trafalgar, Ind.	1 50
	(2) Joel Clore, Franklin, Ind.	1 00
829. Plate York Imperial—		
	(1) Evan Swift, Franklin, Ind.	1 50
	(2) Reed & Fielding, Glenwood, Ind.	1 00
830. Plate Northern Spy—		
	(1) Evan Swift, Franklin, Ind.	1 50
	(2) Hazel V. Stout, Trafalgar, Ind.	1 00
831. Plate Grimes Golden—		
	(1) Joe A. Burton, Orleans, Ind.	1 50
	(2) Hazel V. Stout, Trafalgar, Ind.	1 00
832. Plate Roman Stem—		
	(1) Evan Swift, Franklin, Ind.	1 50
	(2) W. D. Thomas, Connersville, Ind.	1 00
833. Plate Indiana Favorite—		
	(1) Reed & Fielding, Glenwood, Ind.	1 50
	(2) W. D. Thomas, Connersville, Ind.	1 00
834. Plate Belmont—		
	(1) Evan Swift, Franklin, Ind.	1 50
835. Plate Jonathan—		
	(1) W. D. Thomas, Connersville, Ind.	1 50
	(2) J. Y. Demaree, Bud, Ind.	1 00
836. Plate Lausingburg—		
	(1) Reed & Fielding, Glenwood, Ind.	1 50
	(2) W. D. Thomas, Connersville, Ind.	1 00
837. Plate Talman Sweet—		
	(1) Evan Swift, Franklin, Ind.	1 50
	(2) F. M. Benham, Petoskey, Mich.	1 00
838. Plate Vandevere—		
	(1) Reed & Fielding, Glenwood, Ind.	1 50
	(2) W. D. Thomas, Connersville, Ind.	1 00
839. Plate 20-ounce—		
	(1) W. D. Thomas, Connersville, Ind.	1 50
	(2) J. Y. Demaree, Bud, Ind.	1 00
840. Plate Bell's Genet—		
	(1) Joe A. Burton, Orleans, Ind.	1 50
	(2) J. Y. Demaree, Bud, Ind.	1 00
841. Plate Wealthy—		
	(1) John Marvel, Royalton, Ind.	1 50
	(2) Reed & Fielding, Glenwood, Ind.	1 00

842. Plate Stark—	
(1) W. D. Thomas, Connersville, Ind.	1 50
(2) Reed & Fielding, Glenwood, Ind.	1 00
843. Plate Pewaukee—	
(1) Reed & Fielding, Glenwood, Ind.	1 50
(2) Hazel V. Stout, Trafalgar, Ind.	1 00
844. Plate English Russet—	
(1) E. C. Thompson, Irvington, Ind.	1 50
(2) Reed & Fielding, Glenwood, Ind.	1 00

CRAB APPLES.

845. Plate Hyslop—	
(1) Evan Swift, Franklin, Ind.	1 00
(2) J. Y. Demaree, Bud, Ind.	50
846. Plate Red Siberian—	
(1) F. M. Benham, Petoskey, Mich.	1 00
847. Plate Transcendent—	
(1) John Marvel, Royalton, Ind.	1 00
(2) J. Y. Demaree, Bud, Ind.	50
848. Plate Whitney—	
(1) Hazel V. Stout, Trafalgar, Ind.	1 00
(2) Evan Swift, Franklin, Ind.	50
849. Kentucky Red Cider—	
(1) Joe A. Burton, Orleans, Ind.	

PEARS—SINGLE PLATES.

850. Plate Bartlett—	
(1) W. D. Thomas, Connersville, Ind.	1 50
(2) J. Y. Demaree, Bud, Ind.	1 00
851. Plate Anjou—	
(1) Evan Swift, Franklin, Ind.	1 50
(2) Hazel V. Stout, Trafalgar, Ind.	1 00
852. Plate Angoulene (Duchess)—	
(1) C. P. Bradley, South Bend, Ind.	1 50
(2) H. H. Swaim, South Bend, Ind.	1 00
853. Plate Flemish Beauty—	
(1) W. D. Thomas, Connersville, Ind.	1 50
(2) Hazel V. Stout, Trafalgar, Ind.	1 00
854. Plate Howell—	
(1) Robt. Johnson, Castleton, Ind.	1 50
(2) C. P. Bradley, South Bend, Ind.	1 00
855. Plate Keiffer—	
(1) Evan Swift, Franklin, Ind.	1 50
(2) C. P. Bradley, South Bend, Ind.	1 00

856.	Plate Louis Bon—	
	(1) J. Y. Demaree, Bud, Ind.	1 50
	(2) H. H. Swaim, South Bend, Ind.	1 00
857.	Plate Sheldon—	
	(1) Hazel V. Stout, Trafalgar, Ind.	1 50
	(2) W. D. Thomas, Connersville, Ind.	1 00
858.	Plate Seckel—	
	(1) Hazel V. Stout, Trafalgar, Ind.	1 50
	(2) W. D. Thomas, Connersville, Ind.	1 00
859.	Plate Easter Beurre—	
860.	Plate Lawrence—	
	(1) Evan Swift, Franklin, Ind.	1 50
	(2) C. P. Bradley, South Bend, Ind.	1 00
861.	Plate Winter Neils—	
	(1) Evan Swift, Franklin, Ind.	1 50
	(2) H. H. Swaim, South Bend, Ind.	1 00
862.	Plate Vickar—	
	(1) J. W. Daubenspeck, Mattsville, Ind.	1 50
	(2) Hazel V. Stout, Trafalgar, Ind.	1 00
863.	Plate Onondaga—	
	(1) H. H. Swaim, South Bend, Ind.	1 50
	(2) C. P. Bradley, South Bend, Ind.	1 00
864.	Five varieties for family use—	
	(1) C. P. Bradley, South Bend, Ind.	3 00
	(2) H. H. Swaim, South Bend, Ind.	1 50
865.	Five varieties for market use—	
	(1) Hazel V. Stout, Trafalgar, Ind.	3 00
	(2) C. P. Bradley, South Bend, Ind.	1 50

PEACHES.

866.	Six varieties for any purpose—	
	(1) H. E. Haines, South Bend, Ind.	6 00
	(2) C. P. Bradley, South Bend, Ind.	3 00
867.	Three varieties for market—	
	(1) Reed & Fielding, Glenwood, Ind.	3 00
	(2) B. F. Cole, Trafalgar, Ind.	1 50

SINGLE PLATES.

868.	Plate Clings—	
	(1) Reed & Fielding, Glenwood, Ind.	1 50
	(2) J. Y. Demaree, Bud, Ind.	1 00
869.	Plate Free Stones—	
	(1) Reed & Fielding, Glenwood, Ind.	1 50
	(2) J. Y. Demaree, Bud, Ind.	1 00

870. Plate seedlings not exhibited before—	
(1) B. F. Cole, Trafalgar, Ind	1 50
(2) C. P. Bradley, South Bend, Ind	1 00

QUINCES—COLLECTIONS.

871. Best collection, not less than 3 varieties—	
(1) C. P. Bradley, South Bend, Ind	3 00
(2) W. B. Flick, Lawrence, Ind	1 50

SINGLE PLATES.

872. Plate Orange Quince—	
(1) Jennie Hoagland Drake, Beech Grove, Ind	1 50
(2) Evan Swift, Franklin, Ind	1 00
873. Plate Meeche's Prolific—	
(2) C. P Bradley, South Bend, Ind	1 00
874. Plate Champion—	
(1) C. P. Bradley, South Bend, Ind	1 50
875. Plate Missouri Mammoth—	
(1) Evan Swift, Franklin, Ind	1 50

PLUMS—COLLECTIONS.

876. Best collection native plums, those belonging to the American Wild Goose or Chickasaw groups, not less than 3 varieties—	
(1) John Marvel, Royalton, Ind	2 00
(2) J. W. Daubenspeck, Mattsville, Ind	1 00
877. Best collection of plums, European class, not less than 3 varieties—	
(1) C. P. Bradley, South Bend, Ind	2 00
(2) Reed & Fielding, Glenwood, Ind	1 00
878. Best collection of plums, Japanese class, not less than 3 varieties—	
(1) John Marvel, Royalton, Ind	2 00
879. Plate native plums—	
(1) Reed & Fielding, Glenwood, Ind	1 50
(2) John Marvel, Royalton, Ind	1 00
880. Plate European plums—	
(1) John Marvel, Royalton, Ind	1 50
(2) Hazel V. Stout, Trafalgar, Ind	1 00
881. Plate Japanese plums—	
(1) C. P. Bradley, South Bend, Ind	1 50
(2) John Marvel, Royalton, Ind	1 00

GRAPES—GROWN IN OPEN AIR.

882. Six varieties for family use—	
(1) C. P. Bradley, South Bend, Ind.	3 00
(2) C. P. Bradley, South Bend, Ind.	1 50
883. Six varieties for market—	
(1) H. H. Swaim, South Bend, Ind.	3 00
(2) C. P. Bradley, South Bend, Ind.	1 50
884. Five clusters, any kind—	
(1) H. H. Swaim, South Bend, Ind.	2 00
(2) C. P. Bradley, South Bend, Ind.	1 00
885. Best collection grown by exhibitor—	
(1) C. P. Bradley, South Bend, Ind.	10 00

SINGLE PLATES.

886. Plate Worden—	
(1) C. P. Bradley, South Bend, Ind.	1 50
(2) H. H. Swaim, South Bend, Ind.	1 00
887. Plate Concord—	
(1) H. H. Swaim, South Bend, Ind.	1 50
(2) C. P. Bradley, South Bend, Ind.	1 00
888. Plate Wilder—	
(1) C. P. Bradley, South Bend, Ind.	1 50
(2) Sylvester Johnson, Irvington, Ind.	1 00
889. Plate Duchess—	
(1) C. P. Bradley, South Bend, Ind.	1 50
(2) C. P. Bradley, South Bend, Ind.	1 00
890. Plate Brighton—	
(1) C. P. Bradley, South Bend, Ind.	1 50
(2) C. P. Bradley, South Bend, Ind.	1 00
891. Plate Salem—	
(1) C. P. Bradley, South Bend, Ind.	1 50
(2) W. B. Flick, Lawrence, Ind.	1 00
892. Plate Lindley—	
(1) C. P. Bradley, South Bend, Ind.	1 50
(2) W. B. Flick, Lawrence, Ind.	1 00
893. Plate Pocklington—	
(1) Jennie H. Drake, Beech Grove, Ind.	1 50
(2) C. P. Bradley, South Bend, Ind.	1 00
894. Plate Niagara—	
(1) H. H. Swaim, South Bend, Ind.	1 50
(2) C. P. Bradley, South Bend, Ind.	1 00
895. Plate Diamond—	
(1) H. H. Swaim, South Bend, Ind.	1 50
(2) C. P. Bradley, South Bend, Ind.	1 00

896. Plate Vergennes—	
(1) C. P. Bradley, South Bend, Ind	1 50
(2) Sylvester Johnson, Irvington, Ind	1 00
897. Plate McPike—	
(1) Sylvester Johnson, Irvington, Ind	1 50
898. Plate Delaware—	
(1) H. H. Swaim, South Bend, Ind	1 50
(2) C. P. Bradley, South Bend, Ind	1 50
899. Plate Agawan—	
(1) C. P. Bradley, South Bend, Ind	1 50
(2) Sylvester Johnson, Irvington, Ind	1 00
900. Plate Catawaba—	
(1) Hazel V. Stout, Trafalgar, Ind	1 50
(2) H. H. Swaim, South Bend, Ind	1 00
901. Plate Poughkeepsie Red—	
(2) Sylvester Johnson, Irvington, Ind	1 00
902. Plate Ulster Prolific—	
(1) Sylvester Johnson, Irvington, Ind	1 50
903. Plate Moore's Early—	
(1) C. P. Bradley, South Bend, Ind	1 50
(2) C. P. Bradley, South Bend, Ind	1 00
904. Plate Ives—	
(1) Sylvester Johnson, Irvington, Ind	1 50
(2) C. P. Bradley, South Bend, Ind	1 00
905. Plate Carman—	
(1) Sylvester Johnson, Irvington, Ind	1 50
907. Plate Aminia—	
(1) Sylvester Johnson, Irvington, Ind	1 50
908. Plate Woodruff Red—	
(1) C. P. Bradley, South Bend, Ind	1 50
(2) Sylvester Johnson, Irvington, Ind	1 00
909. Plate Wyoming Red—	
(1) Sylvester Johnson, Irvington, Ind	1 50
910. Plate Johnson—	
(1) Sylvester Johnson, Irvington, Ind	1 50
911. Plate Green Mountain—	
(1) Sylvester Johnson, Irvington, Ind	1 50
912. Plate Empire State—	
(1) C. P. Bradley, South Bend, Ind	1 50
(2) C. P. Bradley, South Bend, Ind	1 00
913. Plate Campbell—	
(1) Sylvester Johnson, Irvington, Ind	1 50
914. Plate hot-house grapes—	
(1) Sylvester Johnson, Irvington, Ind	1 50

915. Plate seedlings, not named—	
(1) Sylvester Johnson, Irvington, Ind.	1 50
(2) C. P. Bradley, South Bend, Ind.	1 00

MISCELLANEOUS.

916. Plate persimmons—	
(1) Hazel V. Stout, Trafalgar, Ind.	1 00
(2) B. F. Clore, Trafalgar, Ind.	50
917. Plate pawpaws—	
(1) Evan Davis, Cartersburg, Ind.	1 00
(2) Lunis Sanford, Greenfield, Ind.	50

SWEEPSTAKES.

918. Best and most artistic display of fruits by any county society in Indiana, agricultural or horticultural—	
(1) W. H. Newman, South Bend, Ind.	50 00
(2) J. Y. Demaree, Bud, Ind.	40 00
(3) W. D. Thomas, Connersville, Ind.	20 00

INDIVIDUAL SWEEPSTAKES.

919. Best and most artistic display of fruits grown and exhibited by one individual in Indiana, not less than five varieties—	
(1) Reed & Fielding, Glenwood, Ind.	25 00
(2) W. B. Flick, Lawrence, Ind.	15 00

CLASS XLVII—Flowers.

(W. A. Rieman, Vincennes, Ind., Judge.)

PLANTS.

920. Ten palms—	
(1) A. Wiegand & Son, Indianapolis, Ind.	$10 00
921. Twenty ferns and lycopodiums—	
(2) A. Wiegand & Son, Indianapolis, Ind.	10 00
922. Ten crotons—	
(1) A. Wiegand & Son, Indianapolis, Ind.	7 00
(2) Bauer & Smith, Indianapolis, Ind.	4 00
923. Twenty verigated show plants—	
(2) A. Wiegand, Indianapolis, Ind.	7 00
924. Ten blooming begonias—	
(1) Bauer & Smith, Indianapolis, Ind.	6 00
(2) Cora B. Edmonds, Indianapolis, Ind.	4 00

925. Ten foliage begonias—	
(1) Bauer & Smith, Indianapolis, Ind.	7 00
(2) Cora B. Edmonds, Indianapolis, Ind.	4 00
926. Two vases filled, either iron, rustic or wire—	
(1) Wiegand & Son, Indianapolis, Ind.	8 00
(2) Bauer & Smith, Indianapolis, Ind.	5 00
927. Two specimens Boston ferns—	
(1) Bauer & Smith, Indianapolis, Ind.	8 00
(2) Wiegand & Son, Indianapolis, Ind.	5 00
928. Best arrangement of plants and fancy basket—	
(1) Wiegand & Son, Indianapolis, Ind.	10 00

SPECIAL.

928½. Display and arrangement of show plants—	
(1) Wiegand & Son, Indianapolis, Ind.	35 00
(2) Bauer & Smith, Indianapolis, Ind.	25 00

FIRST GRAND FLORAL DAY.

929. Two floral arrangements—	
(1) John Rieman, Indianapolis, Ind.	25 00
930. Two baskets—	
(1) John Rieman, Indianapolis, Ind.	15 00
931. Collection cut roses—	
(1) W. W. Coles, Kokomo, Ind.	10 00
932. Collection cut flowers—	
(1) W. W. Coles, Kokomo, Ind.	15 00
(2) Bauer & Smith, Indianapolis, Ind.	10 00
933. Collection dahlias—	
(2) Bauer & Smith, Indianapolis, Ind.	3 00

SECOND GRAND FLORAL DAY.

934. Collection cut gladiolus—	
(1) W. W. Coles, Kokomo, Ind.	15 00
935. Original show arrangement of flowers—	
(1) John Rieman, Indianapolis, Ind.	50 00
936. Three bouquets—	
(1) John Rieman, Indianapolis, Ind.	12 00

CLASS LXVIII—Flowers.

(W. A. Rieman, Vincennes, Ind., Judge.)

AMATEUR.

937. Collection of begonias—	
(1) Mrs. Frank P. Johnson, Howlands, Ind.	$4 00
(2) Cora B. Edmonds, Indianapolis, Ind.	2 00

938. Collection foliage plants—	
(1) Cora B. Edmonds, Indianapolis, Ind	3 00
(2) A. R. Edmonds, Indianapolis, Ind	1 50
939. Collection climbing and trailing plants—	
(1) Cora B. Edmonds, Indianapolis, Ind	3 00
(2) Mrs. Mary J. Flick, Lawrence, Ind	1 50
940. Specimen calladium—	
(2) A. R. Edmonds, Indianapolis, Ind	1 00

CUT FLOWERS.

941. Collection geraniums—	
(1) Mrs. P. D. Stagg, Greensburg, Ind	3 00
(2) Cora B. Edmonds, Indianapolis, Ind	2 00
942. Collection cut flowers—	
(1) H. P. Smith, Indianapolis, Ind	4 00
(2) Mary J. Flick, Lawrence, Ind	2 00
943. Collection verbenas—	
(1) Mrs. P. D. Stagg, Greensburg, Ind	3 00
944. Collection dahlias—	
(1) Mrs. J. O. Cammack, Greencastle, Ind	3 00
(2) Mrs. P. D. Stagg, Greensburg, Ind	2 00
945. Collection gladiolus—	
(1) Mrs. P. D. Stagg, Greensburg, Ind	3 00
(2) H. P. Smith, Indianapolis, Ind	2 00
946. Collection cannas—	
(1) Jesse Burnett, Greensburg, Ind	3 00
(2) H. P. Smith, Indianapolis, Ind	2 00
947. Twelve carnations—	
(1) H. P. Smith, Indianapolis, Ind	3 00
(2) Mrs. P. D. Stagg, Greensburg, Ind	2 00
948. Two bouquets of garden flowers—	
(1) A. R. Edmonds, Indianapolis, Ind	4 00
(2) Mrs. P. D. Stagg, Greensburg, Ind	2 00

CLASS XLIX—Bees and Honey.

(Mason J. Niblack, Vincennes, Ind., Judge.)

949. Specimen comb honey, quality and manner of putting up for market to be considered—	
(1) Geo. M. Rumler, Mohawk, Ind	$12 00
950. Extracted honey, quality and manner of putting up for market to be considered—	
(1) Geo. M. Rumler, Mohawk, Ind	12 00
951. Beeswax, not less than 5 pounds—	
(1) Geo. M. Rumler, Mohawk, Ind	2 00

952. Italian bees in one frame observatory hive, purity of workers considered—	
(1) Geo. M. Rumler, Mohawk, Ind	5 00
953. Italian queen bee—	
(1) Geo. M. Rumler, Mohawk, Ind	5 00
954. Honey vinegar, one gallon—	
(1) Geo. M. Rumler, Mohawk, Ind	2 00
(2) John Marvel, Royalton, Ind	1 00
955. Apiarian supplies, best collection—	
(1) Geo. M. Rumler, Mohawk, Ind	10 00
956. Display of honey, the product of one apiary, the arrangement and decoration of display to be considered—	
(1) Geo. M. Rumler, Mohawk, Ind	15 00

CLASS L—Table Luxuries.

(Blanche Draper, Ligonier, Ind., Judge.)

957. Home made cheese—	
(1) Mrs. J. B. Powers, Indianapolis, Ind	$1 50
(2) Mrs. W. A. Ford, Indianapolis, Ind	75
958. Fancy cheese—	
(1) Jennie Hoagland Drake, Beech Grove, Ind	1 50
(2) Mrs. J. B. Powers, Indianapolis, Ind	75
959. Maple syrup, in most marketable shape—	
(1) Geo. M. Rumler, Mohawk, Ind	2 00
(2) Jennie H. Drake, Beech Grove, Ind	1 00
960. Maple sugar—	
(1) Mrs. Martha Luking, Bicknell, Ind	2 00
(2) Geo. M. Rumler, Mohawk, Ind	1 00
961. Bread, wheat, yeast—	
(1) Mrs. Walter S. Hoss, Indianapolis, Ind	1 50
(2) Olin L. Hatton, Indianapolis, Ind	75
962. Bread, wheat, salt rising—	
(1) Mrs. W. F. Hardy, Indianapolis, Ind	1 50
(2) Mrs. Walter S. Hoss, Indianapolis, Ind	75
963. Graham bread, yeast—	
964. Boston brown bread—	
(1) Mrs. Mary J. Flick, Lawrence, Ind	1 50
965. Rusk—	
(1) Mrs. Walter S. Hoss, Indianapolis, Ind	1 50
(2) Helen Kellerher, Broad Ripple, Ind	75
966. Corn gems—	
(1) Jessica E. Eberhardt, Indianapolis, Ind	1 50
(2) Mrs. W. A. Ford, Indianapolis, Ind	75

967.	Dozen rolls—	
	(1) Olin L. Hatton, Indianapolis, Ind	1 50
	(2) Murta G. Arnold, Southport, Ind	75
968.	Ginger bread—	
	(1) Mrs. R. C. Herrick, Indianapolis, Ind	1 50
	(2) Miss Marie Bott, Indianapolis, Ind	75
969.	Ginger cookies—	
	(1) Mrs. Walter S. Hoss, Indianapolis, Ind	1 00
	(2) Jessica E. Eberhardt, Indianapolis, Ind	50
970.	Fig cake—	
	(1) Mrs. L. V. Wilson, Connersville, Ind	1 50
	(2) Mrs. Jerome Dunlap, Lafayette, Ind	75
971.	Layer cake, caramel, orange—	
	(1) Mrs. Jerome Dunlap, Lafayette, Ind	1 50
	(2) Mrs. V. L. Wilson, Connersville, Ind	75
972.	Layer cake, caramel, chocolate—	
	(1) Mrs. Jerome Dunlap, Lafayette, Ind	1 50
	(2) Mary Faught, Indianapolis, Ind	75
973.	Marble loaf cake—	
	(1) Alice V. Hatton, Indianapolis, Ind	1 50
	(2) Mrs. Elnora E. Stewart, Indianapolis, Ind	75
974.	White Mountain cake—	
	(1) Ada A. Norwood, Southport, Ind	1 50
	(2) Nanna Groveclose, Indianapolis, Ind	75
975.	Cocoanut cake—	
	(1) Mrs. V. L. Wilson, Connersville, Ind	1 50
	(2) Mrs. Howard Johnson, Indianapolis, Ind	75
976.	Sunshine cake—	
	(1) Mrs. Laura Childers, Indianapolis, Ind	1 50
	(2) Mrs. Anna Aughinbaugh, Indianapolis, Ind	75
977.	Angel's food—	
	(1) Miss Marie Bott, Indianapolis, Ind	1 50
	(2) Mrs. Martha Luking, Bicknell, Ind	75
978.	Hickory nut loaf cake—	
	(1) A. J. Voris, Indianapolis, Ind	1 50
	(2) Mrs. Jerome Dunlap, Lafayette, Ind	75
979.	Hickory nut layer cake—	
	(1) Mrs. Jerome Dunlap, Lafayette, Ind	1 50
	(2) Mary Faught, Indianapolis, Ind	75
980.	Fruit cake—	
	(1) Mrs. Frank Wood, Indianapolis, Ind	3 00
	(2) Alice V. Hatton, Indianapolis, Ind	2 00
981.	White fruit cake—	
	(1) Mrs. V. L. Wilson, Connersville, Ind	1 50
	(2) Mrs. Laura Childers, Indianapolis, Ind	75

982. White cake—	
(1) Alice V. Hatton, Indianapolis, Ind	1 50
(2) Mrs. M. S. Harlan, Indianapolis, Ind	75
983. Chocolate cake, layer—	
(1) Alice V. Hatton, Indianapolis, Ind	1 50
(2) Mrs. J. M. Porter, Indianapolis, Ind	75
984. Chocolate cake, loaf—	
(1) Mrs. C. C. Richards, Howland, Ind	1 50
(2) Mrs. Jerome Dunlap, Lafayette, Ind	75
985. Crullers—	
(1) Helen Kelleher, Broad Ripple, Ind	1 50
(2) Mrs. J. M. Porter, Indianapolis, Ind	75
986. Cream puff—	
(1) Mrs. Walter Hoss, Indianapolis, Ind	1 50
(2) Mrs. J. B. Powers, Indianapolis, Ind	75
987. Cookies—	
(1) Mrs. W. A. Ford, Indianapolis, Ind	1 50
(2) Jennie H. Drake, Beech Grove, Ind	75
988. Kisses—	
(1) Helen Kelleher, Broad Ripple, Ind	1 50
(2) Mrs. Mary J. Flick, Lawrence, Ind	75
989. Meringues—	
(1) Mrs. John B. Powers, Indianapolis, Ind	1 50
(2) Mrs. W. A. Ford, Indianapolis, Ind	75
990. Cheese straws—	
(1) Jessica E. Eberhardt, Indianapolis, Ind	1 00
(2) Mary J. Flick, Lawrence, Ind	50
991. Apple pie—	
(1) Mrs. John B. Powers, Indianapolis, Ind	1 00
(2) Mrs. W. A. Ford, Indianapolis, Ind	50
992. Peach pie—	
(1) Alice V. Hatton, Indianapolis, Ind	1 00
(2) Mrs. L. B. Hoover, Indianapolis, Ind	50
993. Lemon pie—	
(1) Mrs. Howard Johnson, Indianapolis, Ind	1 00
(2) Mrs. E. B. Ford, Indianapolis, Ind	50
994. Sugar pie—	
(1) Miss Maude Bryson, Indianapolis, Ind	1 00
(2) Mrs. Walter S. Hoss, Indianapolis, Ind	50
995. Pumpkin pie—	
(1) Jennie H. Drake, Beech Grove, Ind	1 00
(2) Mrs. Mary J. Flick, Lawrence, Ind	50
996. Cherry pie—	
(1) Mrs. John B. Powers, Indianapolis, Ind	1 00
(2) Mrs. M. S. Harlan, Indianapolis, Ind	50

997.	Plum pie—	
	(1) Jennie H. Drake, Beech Grove, Ind.	1 00
	(2) Mrs. W. A. Ford, Indianapolis, Ind.	50
998.	Saratoga chips—	
	(1) A. J. Voris, Indianapolis, Ind.	1 00
	(2) Mrs. M. S. Harlan, Indianapolis, Ind.	50
999.	Spiced peaches—	
	(1) Mrs. Bettie Clore, Bargersville, Ind.	1 00
	(2) Mary J. Flick, Lawrence, Ind.	50
1000.	Spiced pears—	
	(1) Jennie H. Drake, Beech Grove, Ind.	1 00
	(2) Mrs. Bettie Clore, Bargersville, Ind.	50
1001.	Spiced cherries—	
	(1) Mrs. John B. Powers, Indianapolis, Ind.	1 00
	(2) Mrs. Bettie Clore, Bargersville, Ind.	50
1002.	Sweet pickles, collection—	
	(1) Mrs. Fremont Eastes, Greenfield, Ind.	4 00
	(2) Mrs. Bettie Clore, Bargersville, Ind.	2 00
1003.	Pickles, mixed—	
	(1) Mrs. V. L. Wilson, Connersville, Ind.	1 50
	(2) Jennie H. Drake, Beech Grove, Ind.	75
1004.	Pickles, cucumber—	
	(1) Mrs. Bettie Clore, Bargersville, Ind.	1 50
	(2) Nanna Groveclose, Indianapolis, Ind.	75
1005.	Peach pickles—	
	(1) Mrs. Bettie Clore, Bargersville, Ind.	1 50
1006.	Pear pickles—	
	(1) Mrs. Bettie Clore, Bargersville, Ind.	1 50
	(2) Mrs. V. L. Wilson, Connersville, Ind.	75
1007.	Tomato catsup, not less than one pint—	
	(1) Mrs. V. L. Wilson, Connersville, Ind.	1 00
	(2) Helen Kelleher, Broad Ripple, Ind.	50
1008.	Cucumber catsup, not less than one pint—	
	(1) Mrs. Walter S. Hoss, Indinanapolis, Ind.	1 00
	(2) Mrs. L. B. Hoover, Indianapolis, Ind.	50
1009.	Chili sauce, not less than one pint—	
	(1) Mrs. L. B. Hoover, Indianapolis, Ind.	1 00
	(2) Mrs. J. M. Porter, Indianapolis, Ind.	50
1010.	Boston baked beans—	
1011.	Gelatine dessert, in any form—	
	(1) A. J. Voris, Indianapolis, Ind.	1 50
	(2) Mrs. John B. Powers, Indianapolis, Ind.	75
1012.	Collection French candies, home made—	
	(1) A. J. Voris, Indianapolis, Ind.	1 50
	(2) Mrs. John B. Powers, Indianapolis, Ind.	75

1013. Collection taffies, home-made—	
(1) Mrs. Frank Wood, Indianapolis, Ind	1 50
(2) Mrs. John B. Powers, Indianapolis, Ind	75
1014. Jellies, collection—	
(1) Mrs. V. L. Wilson, Connersville, Ind	3 00
(2) Mrs. Fremont Eastes, Greenfield, Ind	2 00
1015. Preserves, collection, not less than one pint each—	
(1) Mrs. V. L. Wilson, Connersville, Ind	3 00
(2) Mrs. Fremont Eastes, Greenfield, Ind	2 00
1016. Fruit butters, collection, not less than one pint each—	
(1) Mrs. Bettie Clore, Bargersville, Ind	4 00
(2) Jennie H. Drake, Beech Grove, Ind	2 00
1017. Canned fruit, collection, not less than one pint each—	
(1) Mrs. V. L. Wilson, Connersville, Ind	5 00
(2) Jennie H. Drake, Beech Grove, Ind	3 00

PROFESSIONAL COOKING.

1018. Best collection of cakes, 3 or more kinds—	
(1) Mrs. Martha Luking, Bicknell, Ind	2 00
1019. Best collection of candies, 5 or more kinds—	
(1) Mrs. E. B. Bryson, Indianapolis, Ind	2 00
1020. Fanciest gelatine dessert—	
(1) Mrs. E. B. Bryson, Indianapolis, Ind	2 00
(2) Mrs. T. A. Fegan, Indianapolis, Ind	1 00
1021. Fancy bread for evening refreshments—	
(1) Mrs. K. L. Brown, Indianapolis, Ind	1 50
(2) Miss Maude Bryson, Indianapolis, Ind	75
1022. Fancy dessert for evening refreshments—	
(1) Miss Maude Bryson, Indianapolis, Ind	1 50
(2) Mrs. E. B. Bryson, Indianapolis, Ind	50
1023. Fancy relish for evening refreshments—	
(1) Miss Maude Bryson, Indianapolis, Ind	1 50
(2) Mrs. E. B. Bryson, Indianapolis, Ind	50

CLASS LI—Knitting and Crochet Work.

(Mrs. C. W. Culbertson, Shelbyville, Ind., Judge.)

1024. Infant's shirt—	
(1) Mrs. C. Dille, Greensburg, Ind	$1 00
(2) Miss Susan Reed, Indianapolis, Ind	75
1025. Infant's socks, display—	
(1) Mrs. P. B. Stagg, Greensburg, Ind	1 00
(2) Mrs. C. Dille, Greensburg, Ind	75

1026. Pair silk mittens, hand knit—	
(1) Mrs. V. L. Wilson, Connersville, Ind.	1 50
(2) Mrs. A. L. Moore, Terre Haute, Ind.	75
1027. Pair silk stockings, hand knit—	
(1) Permelia Burns, Greensburg, Ind.	2 00
(2) Mrs. P. D. Stagg, Greensburg, Ind.	1 00
1028. Infant's crochet sacque—	
(1) Mrs. C. Dille, Greensburg, Ind.	1 00
(2) Miss M. L. Fox, Indianapolis, Ind.	75
1029. Couch cover—	
(1) Clara L. Kellogg, Westfield, Mass.	2 00
(2) Mrs. V. L. Wilson, Connersville, Ind.	1 00
1030. Chrochet skirt—	
(1) Mrs. R. H. Talbutt, Lexington, Ky.	2 00
(2) Mrs. J. W. Draper, Ligonier, Ind.	1 00
1031. Silk purse—	
(1) Permelia Burns, Greensburg, Ind.	1 00
(2) Mrs. Wm. Welch, Indianapolis, Ind.	50
1032. Crochet bedspread—	
(1) Mrs. R. H. Talbutt, Lexington, Ky.	2 00
(2) Mrs. W. L. Berryman, Tipton, Ind.	1 00
1033. Infant's silk cap—	
(1) Mrs. Geo. Sands, Kokomo, Ind.	1 50
(2) Mrs. P. D. Stagg, Greensburg, Ind.	75
1034. Ladies' shawl—	
(1) Mrs. L. K. Brown, Indianapolis, Ind.	1 50
(2) Mrs. Isaac King, Indianapolis, Ind.	75

CLASS LII—Lace—Hand Made.

(Mrs. C. W. Culbertson, Shelbyville, Ind., Judge.)

1035. Lace, Battenburg—	
(1) Miss Clara Ballweg, Indianapolis, Ind.	$1 50
(2) Mrs. A. C. Moorse, Muncie, Ind.	1 00
1036. Lace, point—	
(1) Permelia Burns, Greensburg, Ind.	2 00
(2) Alice M. Kline, Crawfordsville, Ind.	1 00
1037. Lace, Duchess—	
(1) Sadie Aughinbaugh, Indianapolis, Ind.	1 50
(2) Miss Clara Ballweg, Indianapolis, Ind.	1 00
1038. Lace, Honiton—	
(1) Sadie Aughinbaugh, Indianapolis, Ind.	1 50
(2) Clara L. Kellogg, Westfield, Mass.	1 00

1039.	Lace, Flemish—	
	(1) Flora V. Greenstreet, Indianapolis, Ind	1 50
	(2) Permelia Burns, Greensburg, Ind	1 00
1040.	Lace, Burges—	
	(1) Clara L. Kellogg, Westfield, Mass	1 50
1041.	Lace, applique—	
	(1) Miss Imogene Hoss, Indianapolis, Ind	1 50
	(2) Mrs. C. Dille, Greensburg, Ind	1 00
1042.	Lace dresser scarf—	
	(1) Mrs. C. Dille, Greensburg, Ind	1 50
	(2) Mrs. A. L. Moore, Terre Haute, Ind	1 00
1043.	Lace table cover—	
	(1) Mrs. A. L. Moore, Terre Haute, Ind	1 50
	(2) Alice M. Kline, Crawfordsville, Ind	1 00
1044.	Lace center piece—	
	(1) Mrs. W. L. Berryman, Tipton, Ind	1 00
	(2) Mrs. O. C. Wilcox, Indianapolis, Ind	75
1045.	Lace sideboard scarf—	
	(1) Mrs. C. Dille, Greensburg, Ind	1 00
	(2) Permelia Burns, Greensburg, Ind	75
1046.	Lace collar—	
	(1) Mrs. H. S. Coffman, Indianapolis, Ind	1 50
	(2) Mrs. Jennie M. Pitts, Indianapolis, Ind	1 00
1047.	Lace head scarf—	
1048.	Lace handkerchief—	
	(1) Permelia Burns, Greensburg, Ind	1 00
	(2) Mrs. H. S. Coffman, Indianapolis, Ind	75
1049.	Best article not mentioned in this class—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind	1 50
	(2) Mrs. C. Dille, Greensburg, Ind	1 00
1050.	Best display laces—	
	(1) Mrs. W. L. Berryman, Tipton, Ind	4 00
	(2) Flora V. Greenstreet, Indianapolis, Ind	2 00

CLASS LIII—Embroidery—Hand Made.

(Mrs. C. W. Culbertson, Shelbyville, Ind., Judge.)

1051.	Delft—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind	$2 00
	(2) Clara L. Kellogg, Westfield, Mass	1 00
1052.	Jewel—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind	2 00
	(2) Mrs. R. H. Talbutt, Lexington, Ky	1 00

1053.	Iridescent—	
	(1) Clara L. Kellogg, Westfield, Mass.	2 00
	(2) Permelia Burns, Greensburg, Ind.	1 00
1054.	Ideal Honiton—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind.	2 00
	(2) Mrs. Clara Kellogg, Westfield, Mass.	1 00
1055.	Cotton—	
	(1) Mrs. C. Dille, Greensburg, Ind.	2 00
	(2) Mrs. P. D. Stagg, Greensburg, Ind.	1 00
1056.	Kensington—	
	(1) Mrs. R. H. Talbutt, Lexington, Ky.	2 00
	(2) Mrs. Clara Kellogg, Westfield, Mass.	1 00
1057.	Rope silk—	
	(1) Mrs. C. W. Vance, Paris, Ill.	2 00
	(2) Mrs. Clara Kellogg, Westfield, Mass.	1 00
1058.	Roman—	
	(1) Permelia Burns, Greensburg, Ind.	2 00
	(2) Mrs. W. L. Berryman, Tipton, Ind.	1 00
1059.	Outline—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind.	1 50
	(2) Mrs. Clara L. Kellogg, Westfield, Mass.	75
1060.	Embroidery on bolting cloth—	
	(1) Mrs P. D. Stagg, Greensburg, Ind.	2 00
	(2) Permelia Burns, Greensburg, Ind.	1 00
1061.	Embroidery on chamois—	
	(1) Mary R. Garver, Indianapolis, Ind.	2 00
	(2) Mrs. H. S. Sperry, Indianapolis, Ind.	1 00
1062.	Queen Anne darning—	
	(1) Mrs. Clara L. Kellogg, Westfield, Mass.	2 00
	(2) Mrs. A. C. Morse, Muncie, Ind.	1 00
1065.	Decore—	
	(1) Mrs. Clara L. Kellogg, Westfield, Mass.	1 50
	(2) Carrie H. Johnson, Indianapolis, Ind.	75
1066.	Lunch set—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind.	3 00
	(2) Mrs. R. H. Talbutt, Lexington, Ky.	2 00
1067.	Doily set, not less than 6 pieces—	
	(1) Mrs. R. H. Talbutt, Lexington, Ky.	2 00
	(2) Mrs. Geo. Sands, Kokomo, Ind.	1 00
1068.	Linen table cloth and 6 napkins—	
	(1) Mrs. C. Dille, Greensburg, Ind.	4 00
	(2) Mrs. L. A. Moore, Terre Haute, Ind.	3 00
1069.	Hostess cloth—	
	(1) Mrs. R. H. Talbutt, Lexington, Ky.	2 00
	(2) Miss Susan Reed, Indianapolis, Ind.	1 00

1070.	Tray cloth—	
	(1) Mrs. C. Dille, Greensburg, Ind.	1 50
	(2) Mrs. Clara Kellogg, Westfield, Mass.	75
1071.	Skirt, silk embroidery—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind.	2 00
	(2) Mrs. H. D. Field, Greensburg, Ind.	1 00
1072.	Infant's shawl, silk embroidery—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind.	2 00
	(2) Mrs. P. D. Stagg, Greensburg, Ind.	1 00
1073.	Infant's cap, silk embroidery—	
	(1) Mrs. C. Dille, Greensburg, Ind.	1 50
1074.	Sideboard scarf—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind.	2 00
	(2) Mrs. R. H. Talbutt, Lexington, Ky.	1 00
1075.	Dresser furnishings, four pieces—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind.	2 00
	(2) Mrs. Clara L. Kellogg, Westfield, Mass.	1 00
1076.	Couch pillow—	
	(1) Mrs. C. W. Vance, Paris, Ill.	2 00
	(2) Mrs. E. B. Ford, Indianapolis, Ind.	1 00
1077.	Toilet cushion, new style—	
	(1) Elinor B. English, Indianapolis, Ind.	3 00
	(2) Alice M. Kline, Crawfordsville, Ind.	2 00
1078.	Table cover—	
	(1) Chas. R. Blessing, Indianapolis, Ind.	3 00
	(2) Alice M. Kline, Crawfordsville, Ind.	2 00
1079.	Table center, embroidered—	
	(1) Mary R. Garver, Indianapolis, Ind.	2 00
	(2) Mrs. R. H. Talbutt, Lexington, Ky.	1 00
1080.	Handkerchief case—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind.	1 50
	(2) Mrs. Clara L. Kellogg, Westfield, Mass.	75
1081.	Glove case—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind.	1 50
	(2) Mrs. C. W. Vance, Paris, Ill.	75
1082.	Picture frame work—	
	(1) Mrs. B. F. French, Indianapolis, Ind.	1 50
	(2) Mary R. Garver, Indianapolis, Ind.	75
1083.	Bulgarian work—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind.	1 50
	(2) Permelia Burns, Greensburg, Ind.	75
1084.	College pillow—	
	(1) Mrs. Maude Everett, Indianapolis, Ind.	2 00
	(2) Mrs. Clara L. Kellogg, Westfield, Mass.	1 00

1085. Best specimen not mentioned in this class—	
(1) Mrs. C. Dille, Greensburg, Ind	1 50
(2) Mrs. Clara L. Kellogg, Westfield, Mass	1 00

CLASS LIV—Sewing—Machine and Hand.

(Mrs. C. W. Culbertson, Shelbyville, Ind., Judge.)

1086. Display of ladies' underwear—	
(1) Jessie Burnett, Greensburg, Ind	$3 00
(2) Mrs. C. W. Vance, Paris, Ill	1 50
1087. Hemstitching, machine—	
(1) Mrs. Geo. Sands, Kokomo, Ind	1 50
(2) Mrs. C. W. Vance, Paris, Ill	75
1088. Ladies' tea jacket—	
(1) Clara L. Kellogg, Westfield, Mass	2 00
(2) Jessica E. Eberhardt, Indianapolis, Ind	1 00

HAND WORK.

1089. Hemstitching, specimen—	
(1) Helen F. Goodwin, New Castle, Ind	2 00
(2) F. O. Barnes, Indianapolis, Ind	1 00
1090. Hemstitching, silk, not handkerchief—	
(1) Mrs. Wm. Welsh, Indianapolis, Ind	2 00
(2) A. K. Lee, Linden, Ind	1 00
1091. Hemstitching, linen, not handkerchief—	
(1) Miss Susan Reed, Indianapolis, Ind	2 00
(2) Mrs. C. Dille, Greensburg, Ind	1 00
1092. Drawn work, Mexican—	
(1) Mrs. C. Dille, Greensburg, Ind	2 00
(2) Mrs. W. L. Berryman, Tipton, Ind	1 00
1093. Infant's outfit, complete, most sensible and neat—	
(1) Mrs. C. Dille, Greensburg, Ind	4 00
(2) Mrs. H. D. Field, Greensburg, Ind	2 00

CLASS LV—Ladies' Fancy Work.

(Mrs. C. W. Culbertson, Shelbyville, Ind., Judge.)

1094. Couch pillow, most sensible—	
(1) Mrs. C. W. Vance, Paris, Ill	$1 50
(2) Mrs. J. B. Powers, Indianapolis, Ind	75
1095. Infant's nursery basket—	
(1) Mrs. C. Dille, Greensburg, Ind	2 00
(2) Jessica Eberhardt, Indianapolis, Ind	1 00

1096.	Book cover, linen—	
	(1) Clara L. Kellogg, Westfield, Mass	1 50
	(2) Mrs. E. B. Ford, Indianapolis, Ind	75
1097.	Lunch set—	
	(1) Mrs. C. Dille, Greensburg, Ind	2 00
	(2) Mrs. H. D. Field, Greensburg, Ind	1 00
1098.	Doilies, not embroidered, not less than 6—	
	(1) Mrs. C. Dille, Greensburg, Ind	1 50
	(2) Mary R. Garver, Indianapolis, Ind	75
1099.	Fancy apron—	
	(2) Mrs. C. Dille, Greensburg, Ind	75
1100.	Kitchen apron, most practical—	
	(1) Mrs. Maude Everett, Indianapolis, Ind	1 50
	(2) Mrs. C. Dille, Greensburg, Ind	75
1101.	Table cover, not embroidered—	
	(1) Mrs. L. A. Moore, Terre Haute, Ind	1 50
	(2) Mrs. R. H. Talbutt, Lexington, Ky	75
1102.	Table center, not embroidered—	
	(1) Permelia Burns, Greensburg, Ind	1 50
	(2) Alice M. Kline, Crawfordsville, Ind	75
1103.	Fancy opera bag—	
	(1) Mary R. Garver, Indianapolis, Ind	1 50
	(2) Mrs. Geo. Sands, Kokomo, Ind	75
1104.	Laundry bag—	
	(1) Mrs. Geo. Sands, Kokomo, Ind	1 50
	(2) Mrs. C. W. Vance, Paris, Ill	75
1105.	Quilt, silk, needle work—	
	(1) Mrs. Maggie Bruncomb, Indianapolis, Ind	3 00
	(2) Mrs. R. H. Talbutt, Lexington, Ky	2 00

CLASS LVI—(For Amateurs Exclusively).

(Mrs. F. D. Abraham, Crawfordsville, Ind., Judge.)

1106.	Best display pictures, 3½x3½ or under, plate or film camera—	
	(1) Alice M. Kline, Crawfordsville, Ind	$3 00
	(2) Minnie B. Akass, Indianapolis, Ind	2 00
1107.	Best display pictures, 3¼x4¼, plate or film camera—	
	(1) Alice M. Kline, Crawfordsville, Ind	3 00
	(2) Minnie B. Akass, Indianapolis, Ind	2 00
1108.	Best display pictures, 4x5, plate or film camera—	
	(1) Ben W. Douglass, Indianapolis, Ind	3 00
	(2) Geo. H. Lacey, Indianapolis, Ind	2 00
1109.	Best display of pictures, 4¼x4¼, plate or film camera—	

1110.	Best display pictures, 5x7, plate or film camera—	
1111.	Best display pictures, 6½x8½, plate or film camera—	
	(1) Alice M. Kline, Crawfordsville, Ind.	3 00
	(2) Ben W. Douglass, Indianapolis, Ind.	2 00
1112.	Best specimen, 3½x3½—	
	(1) Alice M. Kline, Crawfordsville, Ind.	1 50
	(2) Minnie B. Akass, Indianapolis, Ind.	75
1113.	Best specimen, 3¼x4¼—	
	(1) Ben W. Douglass, Indianapolis, Ind.	1 50
	(2) Minnie B. Akass, Indianapolis, Ind.	75
1114.	Best specimen, 4x5—	
	(1) E. W. Barrows, Indianapolis, Ind.	1 50
	(2) Alice M. Kline, Crawfordsville, Ind.	75
1115.	Best specimen, 4¼x4¼—	
1116.	Best specimen, 5x7—	
	(1) Alice M. Kline, Crawfordsville, Ind.	1 50
	(2) Minnie B. Akass, Indianapolis, Ind.	75
1117.	Best specimen, 6½x8½—	
	(1) Alice M. Kline, Crawfordsville, Ind.	1 50
	(2) Ben W. Douglass, Indianapolis, Ind.	75

CLASS LVII—Decorative Art Work.

(Mrs. F. D. Abraham, Crawfordsville, Ind., Judge.)

1118.	Wood carving, display—	
	(1) Kate J. Kiefer, Indianapolis, Ind.	$8 00
	(2) Helen F. Goodwin, New Castle, Ind.	4 00
1119.	Wood carving, specimen—	
	(1) Mrs. Geo. Sands, Kokomo, Ind.	4 00
	(2) Kate J. Kiefer, Indianapolis, Ind.	2 00
1120.	Tapestry painting—	
	(1) Minnie B. Akass, Indianapolis, Ind.	6 00
	(2) Minnie B. Akass, Indianapolis, Ind.	4 00
1121.	Best bon-bon—	
	(1) Mrs. Wm. Welch, Indianapolis, Ind.	3 00
	(2) Mary R. Garver, Indianapolis, Ind.	2 00
1122.	Decorated tray—	
	(1) Mrs. O. C. Wilcox, Indianapolis, Ind.	2 00
	(2) Mrs. Wm. Welch, Indianapolis, Ind.	1 00
1123.	Pyrography, specimen, leather—	
	(1) Mary Greenleaf, Wilbur, Ind.	2 00
	(2) Mrs. W. S. Day, Indianapolis, Ind.	1 00

1124.	Pyrography, specimen, wood—	
	(1) Mary Greenleaf, Wilbur, Ind	2 00
	(2) Grace Greenleaf, Wilbur, Ind	1 00
1125.	Pyrography, display—	
	(1) Mary Greenleaf, Wilbur, Ind	3 00
	(2) Mrs. W. S. Day, Indianapolis, Ind	1 50

CLASS LVIII—Art Work—Paintings and Drawings—Amateur.

(L. H. Meakin, Cincinnati, Ohio, Judge.)

1126.	Portrait in oil, from life—	
	(1) H. C. Summers, Indianapolis, Ind	$6 00
	(2) Minnie B. Akass, Indianapolis, Ind	3 00
1127.	Portrait in crayon, from life—	
	(1) Minnie B. Akass, Indianapolis, Ind	4 00
	(2) Mrs. Clinton Hall, Indianapolis, Ind	2 00
1128.	Portrait in pastel, from life—	
	(1) Minnie B. Akass, Indianapolis, Ind	4 00
	(2) Mrs. Clinton Hall, Indianapolis, Ind	2 00
1129.	Portrait in water colors, from life—	
	(1) Mrs. J. F. Donald, Atchison, Kan	5 00
	(2) Minnie B. Akass, Indianapolis, Ind	2 50
1130.	Ideal head, oil—	
	(1) Minnie B. Akass, Indianapolis, Ind	3 00
	(2) Minnie B. Akass, Indianapolis, Ind	1 50
1131.	Ideal head, crayon—	
	(1) Minnie B. Akass, Indianapolis, Ind	2 00
	(2) Minnie B. Akass, Indianapolis, Ind	1 00
1132.	Ideal head, water colors—	
	(1) Minnie B. Akass, Indianapolis, Ind	2 00
	(2) Mrs. J. F. Donald, Atchison, Kans	1 00
1133.	Ideal head, pastel—	
	(1) Minnie B. Akass, Indianapolis, Ind	2 00
	(2) Mrs. Clinton Hall, Indianapolis, Ind	1 00
1134.	Group figure in oil—	
	(1) Mrs. Clinton Hall, Indianapolis, Ind	2 00
	(2) Minnie B. Akass, Indianapolis, Ind	1 50
1135.	Ideal figure, crayon—	
	(1) Minnie B. Akass, Indianapolis, Ind	2 00
	(2) H. C. Summers, Indianapolis, Ind	1 00
1136.	Group figure, water colors—	
	(1) Minnie B. Akass, Indianapolis, Ind	2 00
	(2) Mrs. J. F. Donald, Atchison, Kans	1 00

1137.	Specimen, flowers, oil—	
	(1) Mrs. Clinton Hall, Indianapolis, Ind	2 50
	(2) Mrs. Clinton Hall, Indianapolis, Ind	1 00
1138.	Display, flowers in oil—	
	(1) Minnie B. Akass, Indianapolis, Ind	2 50
	(2) Mrs. Clinton Hall, Indianapolis, Ind	1 00
1139.	Specimen, flowers, water colors—	
	(1) Clara L. Kellogg, Westfield, Mass	2 00
	(2) Mrs. Anna Brown, Indianapolis, Ind	1 00
1140.	Specimen, fruit, oil—	
	(1) H. C. Summers, Indianapolis, Ind	2 50
	(2) Winifred Austin, Crawfordsville, Ind	1 00
1141.	Specimen, fruit, watercolors—	
	(1) Winifred Austin, Crawfordsville, Ind	2 00
	(2) Minnie B. Akass, Indianapolis, Ind	1 00
1142.	Specimen, vegetable, oil—	
	(1) Minnie B. Akass, Indianapolis, Ind	2 50
	(2) Mrs. Clinton Hall, Indianapolis, Ind	1 00
1143.	Specimen, vegetable, watercolors—	
	(1) Clara L. Kellogg, Westfield, Mass	2 00
	(2) Mrs. J. F. Donald, Atchison, Kas	1 00
1144.	Display, fruit or vegetable in oil—	
	(1) Minnie B. Akass, Indianapolis, Ind	4 50
	(2) Mrs. Clinton Hall, Indianapolis, Ind	2 00
1145.	Display, fruit or vegetable, watercolors—	
	(1) Minnie B. Akass, Indianapolis, Ind	4 00
	(2) Mrs. Clinton Hall, Indianapolis, Ind	2 00
1146.	Specimen, animal, oil—	
	(1) H. C. Summers, Indianapolis, Ind	2 50
	(2) Minnie B. Akass, Indianapolis, Ind	1 00
1147.	Specimen, animal, water colors—	
	(1) Jas. G. Randall, Indianapolis, Ind	2 00
	(2) Mrs. J. F. Donald, Atchison, Kas	1 00
1148.	Specimen, game, oil—	
	(1) Minnie B. Akass, Indianapolis, Ind	2 50
	(2) Mrs. Harriet Van Horn, Indianapolis, Ind	1 00
1149.	Specimen, game, water colors—	
	(1) Minnie B. Akass, Indianapolis, Ind	2 00
	(2) Mrs. Clinton Hall, Indianapolis, Ind	1 00
1150.	Specimen, still life, oil—	
	(1) Mrs. Clinton Hall, Indianapolis, Ind	2 50
	(2) Winifred Austin, Crawfordsville, Ind	1 00
1151.	Specimen, still life, watercolors—	
	(1) Clara L. Kellogg, Westfield, Mass	2 00
	(2) Mrs. Clinton Hall, Indianapolis, Ind	1 00

1152.	Specimen, landscape, oil—	
	(1) Winifred Austin, Crawfordsville, Ind.	2 50
	(2) Minnie B. Akass, Indianapolis, Ind.	1 00
1153.	Specimen, landscape, water colors—	
	(1) Minnie B. Akass, Indianapolis, Ind.	2 00
	(2) Mrs. Clinton Hall, Indianapolis, Ind.	1 00
1154.	Display, landscape, paintings (6 pictures)—	
	(1) Minnie B. Akass, Indianapolis, Ind.	8 00
	(2) Jas. G. Randall, Indianapolis, Ind.	4 00
1155.	Summer scene, oil—	
	(1) H. G. Summers, Indianapolis, Ind.	2 50
	(2) Minnie B. Akass, Indianapolis, Ind.	1 00
1156.	Summer scene, watercolors—	
	(1) Jas. G. Randall, Indianapolis, Ind.	2 00
	(2) Minnie B. Akass, Indianapolis, Ind.	1 00
1157.	Autumn scene, oil—	
	(1) Minnie B. Akass, Indianapolis, Ind.	2 50
	(2) Jas. G. Randall, Indianapolis, Ind.	1 00
1158.	Autumn scene, watercolors—	
	(1) Jas. G. Randall, Indianapolis, Ind.	2 00
	(2) Minnie B. Akass, Indianapolis, Ind.	1 00
1159.	Winter scene, oil—	
	(1) Mrs. Anna Brown, Indianapolis, Ind.	2 50
	(2) Minnie B. Akass, Indianapolis, Ind.	1 00
1160.	Winter scene, water colors—	
	(1) Mrs. Clinton Hall, Indianapolis, Ind.	2 00
	(2) Minnie B. Akass, Indianapolis, Ind.	1 00
1161.	Marine scene, oil—	
	(1) Minnie B. Akass, Indianapolis, Ind.	2 50
	(2) Mrs. Clinton Hall, Indianapolis, Ind.	1 00
1162.	Marine scene, watercolors—	
	(1) Mrs. J. F. Donald, Atchison, Kas.	2 00
	(2) Mrs. Clinton Hall, Indianapolis, Ind.	1 00
1163.	Interior scene, oil—	
	(1) Minnie B. Akass, Indianapolis, Ind.	3 00
	(2) Mrs. J. F. Donald, Atchison, Kas.	1 50
1164.	Interior scene, watercolors—	
	(1) Minnie B. Akass, Indianapolis, Ind.	2 00
	(2) Mrs. Anna Brown, Indianapolis, Ind.	1 00
1165.	Specimen, pencil drawing—	
	(1) H. G. Summers, Indianapolis, Ind.	1 00
	(2) Minnie B. Akass, Indianapolis, Ind.	75
1166.	Specimen, pen and ink sketch—	
	(1) Mrs. C. W. Vance, Paris, Ill.	1 00
	(2) Winifred Austin, Crawfordsville, Ind.	75

1167. Display, pen and ink sketch—	
(1) Winifred Austin, Crawfordsville, Ind	4 00
(2) Minnie B. Akass, Indianapolis, Ind	2 00
1168. Drawing, architectural, original—	
1169. Drawing, mechanical—	
1170. Drawing, charcoal, from antique, specimen—	
(1) Mrs. Anna Brown, Indianapolis, Ind	4 00
(2) H. G. Summers, Indianapolis, Ind	2 00
1171. Best display of pastels—	
(1) Minnie B. Akass, Indianapolis, Ind	4 00
(2) Mrs. Clinton Hall, Indianapolis, Ind	2 00
1172. Best entire exhibit paintings and drawings—	
(1) Minnie B. Akass, Indianapolis, Ind	10 00
(2) Mrs. Clinton Hall, Indianapolis, Ind	5 00

CLASS LIX—Art Work—Paintings and Drawings—Professional.

(L. H. Meekin, Cincinnati, Ohio, Judge.)

1173. Portrait in oil, made in past 2 years—	
(1) G. V. Strauss, Crawfordsville, Ind	$15 00
(2) Helen F. Goodwin, New Castle, Ind	8 00
1174. Portrait in water colors—	
(1) Mrs. J. O. Spahr, Indianapolis, Ind	10 00
(2) Mrs. C. F. Palmer, Indianapolis, Ind	5 00
1175. Portrait in crayon—	
(1) Dollie C. Scarff, Indianapolis, Ind	6 00
(2) Mrs. Orris Pratt, Springs Prairie, Wis	3 00
1176. Portrait in pastel—	
(1) Mrs. Orris Pratt, Springs Prairie, Wis	10 00
(2) Mrs. C. F. Palmer, Indianapolis, Ind	5 00
1177. Ideal head, oil—	
(1) Helen F. Goodwin, New Castle, Ind	6 00
(2) Mrs. J. O. Spahr, Indianapolis, Ind	3 00
1178. Ideal head, watercolors—	
(1) Mrs. W. R. Galpin, Indianapolis, Ind	4 00
(2) Mrs. J. O. Spahr, Indianapolis, Ind	2 00
1179. Ideal figure, oil—	
(1) Mrs. Marie E. Folger, Marion, Ind	6 00
(2) Helen F. Goodwin, New Castle, Ind	3 00
1180. Group figure, oil—	
(1) Elizabeth Herr, Indianapolis, Ind	5 00
(2) Helen F. Goodwin, New Castle, Ind	2 50
1181. Ideal figure, watercolors—	
(1) Mary Greenleaf, Wilbur, Ind	4 00

1182.	Group figure, oil—	
	(1) Grace Greenleaf, Wilbur, Ind	4 00
	(2) Jos. L. Frank, Des Moines, Ia	2 00
1183.	Specimen, flowers, oil—	
	(1) Mrs. J. O. Spahr, Indianapolis, Ind	4 00
	(2) Helen F. Goodwin, New Castle, Ind	2 00
1184.	Display, flowers, oil—	
	(1) Mrs. Orris Pratt, Prairie Springs, Wis	6 00
1185.	Specimen, flowers, watercolors—	
1186.	Display, flowers, watercolors—	
	(1) Joe L. Frank, Des Moines, Ia	5 00
	(2) M. L. Taylor, Indianapolis, Ind	3 00
1187.	Specimen, fruit, oil—	
	(1) G. V. Strauss, Crawfordsville, Ind	4 00
	(2) Mrs. J. O. Spahr, Indianapolis, Ind	2 00
1188.	Specimen, fruit, watercolors—	
	(1) Joe L. Frank, Des Moines, Ia	3 50
	(2) G. V. Strauss, Crawfordsville, Ind	2 00
1189.	Specimen, vegetable, oil—	
	(1) Dollie C. Scarff, Indianapolis, Ind	4 00
	(2) Mrs. Orris Pratt, Springs Prairie, Wis	2 00
1190.	Specimen, vegetable, watercolors—	
	(1) G. V. Strauss, Crawfordsville, Ind	3 50
	(2) G. V. Strauss, Crawfordsville, Ind	2 00
1191.	Display, fruit or vegetable, oil—	
	(1) Mrs. Marie Folger, Indianapolis, Ind	6 00
	(2) Mrs. Orris Pratt, Prairie Springs, Wis	3 00
1192.	Display, fruit or vegetable, watercolors—	
	(1) G. V. Strauss, Crawfordsville, Ind	5 00
	(2) Mrs. W. R. Galpin, Indianapolis, Ind	3 00
1193.	Animal, in oil—	
	(1) Mrs. Marie Folger, Marion, Ind	4 00
	(2) Mrs. Frank E. Doak, Indianapolis, Ind	2 00
1194.	Animal, watercolors—	
	(1) Joe L. Frank, Des Moines, Ia	3 50
	(2) G. V. Strauss, Crawfordsville, Ind	2 00
1196.	Game, oil—	
	(1) Mrs. Marie Folger, Marion, Ind	4 00
	(2) Dollie C. Scarff, Indianapolis, Ind	2 00
1197.	Still life, oil—	
	(1) Mrs. Marie Folger, Marion, Ind	4 00
	(2) Helen F. Goodwin, New Castle, Ind	2 00
1198.	Still life, water color—	
	(1) Grace Greenleaf, Wilbur, Ind	3 50
	(2) Mrs. Marie Folger, Marion, Ind	2 00

1199.	Specimen, landscape, oil—	
	(1) G. V. Strauss, Crawfordsville, Ind.	4 00
	(2) Dollie C. Scarff, Indianapolis, Ind.	2 00
1200.	Specimen, landscape, watercolors—	
	(1) Mrs. C. F. Palmer, Indianapolis, Ind.	3 50
	(2) G. V. Strauss, Crawfordsville, Ind.	2 00
1201.	Display, landscape paintings (6 pieces)—	
	(1) G. V. Strauss, Crawfordsville, Ind.	6 00
	(2) Helen F. Goodwin, New Castle, Ind.	3 00
1202.	Interior scene, oil—	
	(1) Helen F. Goodwin, New Castle, Ind.	4 50
	(2) Mrs. Marie E. Folger, Marion, Ind.	2 00
1203.	Interior scene, watercolors—	
	(1) Helen F. Goodwin, New Castle, Ind.	4 50
1204.	Drawing, antique head—	
	(1) Mrs. Marie Folger, Marion, Ind.	4 00
	(2) Joe L. Frank, Des Moines, Ia.	2 00
1205.	Drawing from antique, figure—	
	(1) Helen F. Goodwin, New Castle, Ind.	4 00
	(2) Elizabeth Herr, Indianapolis, Ind.	2 00
1206.	Drawing, animal—	
	(1) Mrs. J. O. Spahr, Indianapolis, Ind.	4 00
	(2) Joe L. Frank, Des Moines, Ia.	2 00
1207.	Drawing, architectural—	
	(1) Elizabeth Herr, Indianapolis, Ind.	4 00
1208.	Drawing, mechanical—	
1209.	Pen and ink drawing—	
	(1) Mary Greenleaf, Wilbur, Ind.	2 00
	(2) Mrs. Marie Folger, Marion, Ind.	1 00
1210.	Charcoal drawing, from life—	
	(1) Joe L. Frank, Des Moines, Ia.	3 00
	(2) Helen Goodwin, New Castle, Ind.	2 00
1211.	Best display pastels—	
	(1) Mrs. Marie Folger, Marion, Ind.	4 00
	(2) Mrs. J. O. Spahr, Indianapolis, Ind.	2 00
1212.	Best display crayons—	
	(1) Helen F. Goodwin, New Castle, Ind.	4 00
1213.	Best entire exhibit of paintings and drawings—	
	(1) Mrs. Marie Folger, Marion, Ind.	12 00
	(2) Mrs. J. O. Spahr, Indianapolis, Ind.	6 00

CLASS LX—Art Work—China—Amateur.

(Mrs. F. D. Abraham, Crawfordsville, Ind., Judge.)

1214.	Painting on china, Dresden, specimen—	
	(1) Mary R. Garver, Indianapolis, Ind	$2 00
	(2) Flora V. Greenstreet, Indianapolis, Ind	1 00
1215.	Painting on china, Persian, specimen—	
	(1) Flora V. Greenstreet, Indianapolis, Ind	2 00
	(2) Mary R. Garver, Indianapolis, Ind	1 00
1216.	Painting on china, relief work—	
	(1) Flora V. Greenstreet, Indianapolis, Ind	2 00
	(2) Mary R. Garver, Indianapolis, Ind	1 00
1217.	Painting on china, enamel—	
	(1) Flora V. Greenstreet, Indianapolis, Ind	2 00
	(2) Mrs. J. O. Spahr, Indianapolis, Ind	1 00
1218.	Painting on china, punch bowl, flowers—	
	(1) Mrs. F. E. Wolcott, Indianapolis, Ind	4 00
1219.	Painting on china, punch bowl, figure—	
1220.	Painting on china, punch bowl, fruit—	
	(1) Miss Louise Schulmeyer, Indianapolis, Ind	4 00
	(2) Sarena A. Hogan, Indianapolis, Ind	2 00
1221.	Painting on china, tankard, figure—	
1222.	Painting on china, tankard, flowers—	
	(1) Miss Louise Schulmeyer, Indianapolis, Ind	4 00
	(2) Mrs. W. T. Fugate, Indianapolis, Ind	2 00
1223.	Painting on china, tankard, fruit—	
	(1) Mrs. J. O. Spahr, Indianapolis, Ind	4 00
	(2) Elinor H. English, Indianapolis, Ind	2 00
1224.	Painting on china, claret pitcher—	
	(1) Miss Louise Schulmeyer, Indianapolis, Ind	4 00
	(2) Mrs. W. T. Fugate, Indianapolis, Ind	2 00
1225.	Painting on china, jardiniere, figures—	
1226.	Painting on china, jardiniere, flowers—	
	(1) Elinor H. English, Indianapolis, Ind	4 00
	(2) Miss Louise Schulmeyer, Indianapolis, Ind	2 00
1228.	Painting on china, Doulton, specimen—	
	(1) Mary R. Garver, Indianapolis, Ind	2 00
	(2) Mrs. W. T. Fugate, Indianapolis, Ind	1 00
1229.	Painting on china, fruit set, compote and plates—	
	(1) Mrs. Harriett Van Horn, Indianapolis, Ind	4 00
	(2) Daisy C. Altland, Indianapolis, Ind	2 00
1231.	Painting on china, salad set—	
	(1) Miss Louise Schulmeyer, Indianapolis, Ind	4 00
	(2) Flora V. Greenstreet, Indianapolis, Ind	2 00

1232.	Painting on china, library set—	
	(1) Mary R. Garver, Indianapolis, Ind.	4 00
	(2) Mrs. Harriett Van Horn, Indianapolis, Ind.	2 00
1233.	Painting on china, tea set—	
	(1) Mary R. Garver, Indianapolis, Ind.	4 00
	(2) Miss Louise Schulmeyer, Indianapolis, Ind.	2 00
1234.	Painting on china, soup set—	
	(1) Mrs. Geo. Coughlin, Indianapolis, Ind.	4 00
	(2) Miss Louise Schulmeyer, Indianapolis, Ind.	2 00
1235.	Painting on china, pudding set—	
	(1) Mary R. Garver, Indianapolis, Ind.	4 00
	(2) Sarena A. Hogan, Indianapolis, Ind.	2 00
1236.	Painting on china, manicure—	
	(1) Mrs. W. T. Fugate, Indianapolis, Ind.	2 00
1237.	Painting on china, 6 plates—	
	(1) Miss Louise Schulmeyer, Indianapolis, Ind.	4 00
	(2) Flora V. Greenstreet, Indianapolis, Ind.	2 00
1238.	Painting on china, 6 plates, figure—	
	(1) Mary R. Garver, Indianapolis, Ind.	4 00
	(2) Miss Louise Schulmeyer, Indianapolis, Ind.	2 00
1239.	Painting on china, 6 plates, flowers or fruit—	
	(1) Miss Louise Schulmeyer, Indianapolis, Ind.	4 00
	(2) Daisy C. Altland, Indianapolis, Ind.	2 00
1240.	Ideal head, china or porcelain—	
	(1) Mrs. J. O. Spahr, Indianapolis, Ind.	2 00
	(2) Mrs. E. B. Ford, Indianapolis, Ind.	1 00
1241.	Ideal figure, china or porcelain—	
	(1) Mary R. Garver, Indianapolis, Ind.	2 00
	(2) June Wysong, Indianapolis, Ind.	1 00
1242.	Painting on china, portrait—	
	(1) Mrs. J. O. Spahr, Indianapolis, Ind.	4 00
	(2) Mrs. Chas. Kramer, Indianapolis, Ind.	2 00
1243.	Painting on china, dusted tinting—	
	(1) Mary R. Garver, Indianapolis, Ind.	4 00
	(2) Daisy C. Altland, Indianapolis, Ind.	2 00
1244.	Painting on china, lustre—	
	(1) Mary R. Garver, Indianapolis, Ind.	2 00
	(2) Daisy C. Altland, Indianapolis, Ind.	1 00
1245.	Painting on china, conventional—	
	(1) Flora V. Greenstreet, Indianapolis, Ind.	2 00
	(2) Mary R. Garver, Indianapolis, Ind.	1 00
1246.	Painting on china, stein—	
	(1) Mary R. Garver, Indianapolis, Ind.	2 00
	(2) Mrs. Harriett Van Horn, Indianapolis, Ind.	1 00

1247.	Painting on china, toilet set—	
	(1) Daisy C. Altland, Indianapolis, Ind	2 00
	(2) Mary R. Garver, Indianapolis, Ind	1 50
1248.	Painting on china, game set—	
	(1) Daisy C. Altland, Indianapolis, Ind	5 00
	(2) Miss Louise Schulmeyer, Indianapolis, Ind	2 50
1249.	Painting on china, fish set—	
	(1) Miss Louise Schulmeyer, Indianapolis, Ind	3 00
1250.	Painting on china, 6 cups and saucers—	
	(1) Flora V. Greenstreet, Indianapolis, Ind	2 00
	(2) Mrs. W. T. Fugate, Indianapolis, Ind	1 50
1251.	Painting on china, 3 ornamental pieces—	
	(1) Mrs. Chas. Kramer, Indianapolis, Ind	3 00
1252.	Painting on china, underglass display—	
	(1) Mrs. W. S. Day, Indianapolis, Ind	4 00
	(2) Mrs. W. S. Day, Indianapolis, Ind	2 00
1253.	Painting on glass, mineral colors, display—	
	(1) Mrs. W. S. Day, Indianapolis, Ind	6 00
	(2) Mrs. O. C. Wilcox, Indianapolis, Ind	3 00
1254.	Painting on china, under instruction—	
	(1) Mary R. Garver, Indianapolis, Ind	5 00
	(2) Fay A. Harris, Indianapolis, Ind	2 00
1255.	Best specimen, not mentioned in this class—	
	(1) Elinor H. English, Indianapolis, Ind	2 00
	(2) Mrs. Chas. Kramer, Indianapolis, Ind	1 00

CHINA—PROFESSIONAL.

(Mrs. F. D. Abraham, Crawfordsville, Ind., Judge.)

1257.	Painting on china, Dresden, specimen—	
	(1) W. S. Day, Indianapolis, Ind	4 00
	(2) Mrs. O. C. Wilcox, Indianapolis, Ind	2 00
1258.	Painting on china, Persian, specimen—	
	(1) Mrs. W. S. Day, Indianapolis, Ind	4 00
	(2) Mrs. O. C. Wilcox, Indianapolis, Ind	2 00
1259.	Painting on china, lamp—	
	(1) Mrs. W. S. Day, Indianapolis, Ind	4 00
1260.	Painting on china, 3 ornamental pieces—	
	(1) Mrs. W. S. Day, Indianapolis, Ind	4 00
	(2) Mrs. O. C. Wilcox, Indianapolis, Ind	2 00
1261.	Painting on china, relief, gold—	
	(1) Mrs. O. C. Wilcox, Indianapolis, Ind	4 00
	(2) Mrs. W. S. Day, Indianapolis, Ind	2 00

1262.	Painting on china, Doulton, specimen—	
	(1) Mrs. Wm. Welch, Indianapolis, Ind.	4 00
	(2) Mrs. O. C. Wilcox, Indianapolis, Ind.	2 00
1263.	Painting on china, enamel—	
	(1) Mrs. O. C. Wilcox, Indianapolis, Ind.	4 00
	(2) Mrs. O. C. Wilcox, Indianapolis, Ind.	2 00
1264.	Painting on china, tankard, flowers—	
1265.	Painting on china, tankard, figure—	
	(1) Mrs. W. S. Day, Indianapolis, Ind.	4 00
	(2) Mrs. Wm. Welch, Indianapolis, Ind.	2 00
1266.	Painting on china, punch bowl, flowers—	
	(1) Mrs. W. S. Day, Indianapolis, Ind.	4 00
1267.	Painting on china, punch bowl—	
1268.	Jardiniere—	
	(1) Mrs. W. S. Day, Indianapolis, Ind.	4 00
1269.	Painting on china, claret pitcher—	
	(1) Mrs. O. C. Wilcox, Indianapolis, Ind.	4 00
	(2) Mrs. W. S. Day, Indianapolis, Ind.	2 00
1270.	Painting on china, chocolate set—	
	(1) Mrs. W. S. Day, Indianapolis, Ind.	4 00
	(2) Mrs. O. C. Wilcox, Indianapolis, Ind.	2 00
1271.	Painting on china, tea set—	
	(1) Mrs. O. C. Wilcox, Indianapolis, Ind.	4 00
	(2) Mrs. W. S. Day, Indianapolis, Ind.	2 00
1272.	Painting on china, salad set—	
	(1) Mrs. Wm. Welch, Indianapolis, Ind.	4 00
	(2) Mrs. W. S. Day, Indianapolis, Ind.	2 00
1273.	Painting on china, library set—	
	(1) Mrs. O. C. Wilcox, Indianapolis, Ind.	4 00
	(2) Mrs. W. S. Day, Indianapolis, Ind.	2 00
1274.	Painting on china, fruit set—	
	(1) Mrs. W. S. Day, Indianapolis, Ind.	6 00
	(2) Mrs. W. S. Day, Indianapolis, Ind.	3 00
1275.	Painting on china, pudding set—	
	(1) Mrs. W. S. Day, Indianapolis, Ind.	6 00
	(2) Mrs. Wm. Welch, Indianapolis, Ind.	3 00
1276.	Painting on china, soup set—	
	(1) Mrs. Wm. Welch, Indianapolis, Ind.	5 00
	(2) Mrs. W. S. Day, Indianapolis, Ind.	2 50
1277.	Painting on china, mush and milk set—	
	(1) Mrs. O. C. Wilcox, Indianapolis, Ind.	4 00
	(2) Mrs. W. S. Day, Indianapolis, Ind.	2 00
1278.	Painting on china, 6 plates—	
	(1) Mrs. W. S. Day, Indianapolis, Ind.	4 00
	(2) Mrs. O. C. Wilcox, Indianapolis, Ind.	2 00

1279.	China of conventional design—	
	(1) Mrs. O. C. Wilcox, Indianapolis, Ind	4 00
	(2) Mrs. W. S. Day, Indianapolis, Ind	2 00
1280.	Ideal head, china or porcelain—	
	(1) Mrs. W. S. Day, Indianapolis, Ind	4 00
	(2) Mrs. C. F. Palmer, Indianapolis, Ind	2 00
1281.	Ideal figure, china or porcelain—	
	(1) Mrs. W. S. Day, Indianapolis, Ind	4 00
	(2) Mrs. Wm. Welch, Indianapolis, Ind	2 00
1282.	Portrait, china, original design—	
	(1) Mrs. W. S. Day, Indianapolis, Ind	4 00
	(2) Mrs. W. S. Day, Indianapolis, Ind	2 00
1283.	Painting on china, dusted tinting—	
	(1) Mrs. O. C. Wilcox, Indianapolis, Ind	4 00
	(2) Mrs. C. F. Palmer, Indianapolis, Ind	2 00
1284.	Six plates, original design—	
	(1) Mrs. C. F. Palmer, Indianapolis, Ind	4 00
	(2) Mrs. W. S. Day, Indianapolis, Ind	2 00
1285.	Painting on china, figure—	
	(1) Mrs. Wm. Welch, Indianapolis, Ind	3 00
	(2) Mrs. W. S. Day, Indianapolis, Ind	1 50
1286.	Painting on china, under instruction—	
	(1) Mrs. W. S. Day, Indianapolis, Ind	6 00
	(2) Mrs. C. F. Palmer, Indianapolis, Ind	3 00
1287.	Best entire exhibit painting on china—	
	(1) Mrs. W. S. Day, Indianapolis, Ind	12 00
	(2) Mrs. O. C. Wilcox, Indianapolis, Ind	6 00

PROCEEDINGS

OF THE

Indiana Horticultural Society.

MIDSUMMER MEETING AT ORLEANS, AUGUST 20 AND 21,

1901.

The first midsummer meeting, under the auspices of the Indiana Horticultural Society and Purdue University School of Agriculture, was held at Orleans, Indiana, on Tuesday and Wednesday, August 20 and 21, 1901.

Following is the program for the meeting:

TUESDAY, AUGUST 20.

Symposium—Fruit Possibilities in Southern Indiana.

Geo. P. Campbell	Bloomington
J. A. Burton	Orleans
Mrs. W. W. Stevens	Salem

Conditions of Success in Fruit Growing.

The Man—S. H. Fulton	South Haven, Mich.
The Soil—C. M. Hobbs	Bridgeport

Evening—Educational Session.

The Farmer's Son—H. F. McMahan	Fairfield
The Farmer's Daughter—Mrs. C. N. Lindley	Salem

WEDNESDAY, AUGUST 21.

Tree Fruits—Market Varieties.

Apples and Pears—C. M. Hobbs.............................Bridgeport
Stone Fruits—U. M. Stewart....................................Madison
Soil Fertilization—Prof. H. A. Huston.........................Lafayette
Spraying and Spraying Mixtures—S. H. Fulton................Michigan

The Apple and How to Grow It.

Soil and Site—J. A. Burton.......................................Orleans
Planning and Care of the Young Orchard—Will. Ritterskamp...Princeton
Care of the Bearing Orchard—W. C. Reed.....................Vincennes
Pruning and Thinning—Prof. E. S. Goff..................Madison, Wis.

MORNING SESSION.

Tuesday, August 20, 9 A. M.

FRUIT POSSIBILITIES IN SOUTHERN INDIANA.

BY GEORGE P. CAMPBELL, BLOOMINGTON.

At the present it is very gloomy for the farmer, gardener and fruit grower. No doubt there are many who feel like giving up in despair, but we must not give up, but push ahead and try and find the means to overcome at least some of the difficulties that confront us. I can remember when it was no trouble to grow all kinds of fruit with but very little attention. Farmers would set the trees in the fence corner, and without any cultivation or attention would in a very few years receive bountiful crops of fruit; and still all must acknowledge that fruit growing in southern Indiana is in its infancy. We are just beginning to find out that the soil in this section of the State is as well or better adapted to fruit growing, especially the apple and pear, than any other State in the Union. Our limestone clay soil puts more color and flavor in the fruit than can be found anywhere else. Some years the climatic conditions are such that we have failures in some kinds of fruits, but it is seldom that we fail in all on that account.

What, then, is the main hindrance to our growing fruit successfully? My answer is, Injurious insects and fungous diseases. We have insects that prey upon us on every hand; they eat our clothing, our furniture, and prey on our domestic animals, but it is to the farmer and fruit grower that they are of especial interest. It is a continual warfare to keep the injurious insects from destroying our entire crop. Our entomologists are giving a great deal of time and thought to these pests and are finding weapons by which we may in some degree defend ourselves against their depredations. We, as farmers and horticulturists, are not showing our appreciation of their efforts to help us; they are human and often make mistakes, but we should encourage them to go ahead for the successes they have made. Practical entomology should be taught in our common schools; there are but few children but would take an interest in it if properly presented. Some of our legislators and cranks seem to think that we must now have Latin, French and Greek taught in our common schools. These dead languages may be all right for ministers and professors in our colleges, but of what practical benefit is it to the farmer's son and daughter? Give us entomology and botany in the common schools and the boys and girls will be more interested in agricultural and horticultural pursuits and will better know how to defend themselves against all insect intruders.

We have already found that judicious spraying with a solution of paris green or other arsenites is very beneficial for the destruction of insects that devour our fruit and foliage; also, that there are other remedies for the destruction of fungous diseases, but it has not been an entire success. The sooner the young people are taught these branches in the common schools the sooner we will be able to overcome these obstacles.

The State Horticultural Society has recognized the fact that we in southern Indiana are better located as regards soil and climate than any other part of the State by locating the experimental orchard in our midst. This orchard, if managed properly, will be the means of advancing the fruit interest in this part of southern Indiana and the entire State.

Looking back a few years, and thinking of what great things have been accomplished in the way of mechanical devices for the benefit of the farmer and fruit grower, it is but natural for us to look forward and try and imagine what will be done in the near future.

This is an age of invention and electricity, and I think it possible to invent an electrical machine that will do away with paris green and Bordeaux mixture. All that we need do will be to point the instrument at the tree or plant, press a button, and all insect life will be no more.

The hills of these southern counties now grown up with jack oak and sassafras will in a few years be covered with luxuriant vineyards and apple and pear orchards. There will be a horticultural society in every school district which will be subordinate to the Southern Indiana Horticultural Society, which will hold quarterly meetings at the experimental orchard near Orleans. Then we may be growing Ben Davis apples as big as peck measures and Concord and Niagara grapes as large as goose eggs. The products can be loaded into air ships which will carry them to market. They will leave this part of the State at 3 a. m. and arrive in Chicago in time for the morning market, where the contents can be sold and the owner return home in time for dinner.

FRUIT POSSIBILITIES IN SOUTHERN INDIANA.

BY JOE A. BURTON, ORLEANS.

The Apple.—Since 1896 southern Indiana has not grown one-fourth the apples she has used. During the same time she has not used one-fourth what she needed. That is, during the last six years southern Indiana has produced less than one-sixteenth of the apples needed for home consumption. A herculean task is assigned me to convince these people they ought to go into apple growing for profit in the face of these facts. One missionary, having labored seven years in a heathen land without a convert, was asked to desist; that nothing could be accomplished. He replied that he would not desist, for the Eternal God had promised success. Well, the Eternal God has abundantly combined the necessary conditions for successful apple growing here. The only requisite left out is the suitable man. When I try to induce my neighbors to grow apples, they say "Oh, yes, we know you can grow them, but we can't." Some say I ought to grow them for the whole community.

Now, I think I know my own worth and abilities better than anybody else, and I know it has not been by the free use of ability that I have succeeded in apple growing. I have applied very little of what knowledge I had in producing my good crops. Like many of my neighbors, I know better than I do. Did I use as much care in attending my orchard as some of my neighbors do in their grain crops, my success would be phenomenal. I hope to do better in the future, but whether this will induce others to engage in the business, or deter them, is uncertain. If they attribute my success alone to my efforts, and not to the natural advantages of the country, they will be driven further away. I have grown fine apples, largely because it is easy to grow fine apples. I had the finest Winesaps at Paris, probably because there were no other Winesaps there from southern Indiana. I have taken first premium on Winesaps for years till this year, when another man from southern Indiana brought up some and beat me, and says he will do it again. Yes, and he may beat me on Grimes. Now, I beg pardon for talking so much about myself, but I want you to understand that it is the great adaptability of southern Indiana that is responsible for my fine apples, rather than Joe A. himself. I would not intimate that paying crops can be grown here without some care. That day has passed. What I want to impress upon you is that it is not a difficult thing to grow apples in this region.

FRUIT POSSIBILITIES IN SOUTHERN INDIANA.

BY MRS. W. W. STEVENS, SALEM.

Much of the entire area of southern Indiana is specially adapted to the growing of fruits, both small and tree. The knob lands all along the Ohio river have sufficient elevation and adaptability of soil to make both apple and peach growing profitable. Here we now find the largest peach and apple orchards in the State. The small fruit industry is being developed in a few localities, and is proving quite remunerative. We know farmers who have realized as much as $450 per acre on strawberries. Where up-to-date methods of cultivation and caring for orchards are practiced, fruit land will yield much larger returns than any other branch of farming. We would not encourage peach growing, except in a very few especially favorable localities, but the possibilities of apple culture on our limestone soils, and of small fruits on the free stone, are without limit, both in quality and quantity of fruit. All we need to make this part of the State famous is well directed energy and co-operation among intelligent, progressive fruit growers. We do not think our State Horticultural Society has ever done as grand a work for horticulture as that of locating an experimental apple orchard here in a section of country that is especially adapted to apple growing.

The possibilities of apple growing in at least a dozen counties that lie along the Ohio river is best exemplified by stating what has been done in a few localities. We know of lands that a dozen years ago were considered worth little more than the taxes that were paid thereon—were sold at from one to three dollars per acre. When it was discovered that this same land, when planted to apples, and when large enough to produce a crop, brought in one season from $75 to $100 per acre, these same lands brought more than the level bottom lands that were especially adapted to corn and wheat growing. We also knew lands on the knobs that twenty-five years ago had been deserted and given up as worthless, but now that the cultivation of small fruits has developed, these same lands are veritable garden spots and the new, commodious homes of the owners thereof bear testimony that prosperity has again returned to them.

But haphazard methods will not win success in southern Indiana any more than in other sections of the country. But the man who starts an orchard and is capable of giving it the right kind of treatment is surer of success than a farmer in any other line. We must cultivate, we must spray, we must thin our fruit if we would get a profit out of it. Every year it becomes more apparent that the supply of good fruit is far below the demand, and the successful grower is realizing larger profits than ever before. We are sure that the possibilities of fruit growing is growing brighter and brighter as the days go by.

CONDITIONS OF SUCCESS IN FRUIT GROWING.

THE MAN.

BY S. H. FULTON, SOUTH HAVEN, MICH.

No copy of this paper was obtained.

CONDITIONS OF SUCCESS IN FRUIT GROWING.

THE SOIL.

BY C. M. HOBBS, BRIDGEPORT.

All soils have their origin in the disintegration of the rocks and in the decay of vegetable and animal matter. The gravel, sand and clay come from the rocks; the humus from the vegetable and animal matter. The different combinations of these substances give us our variety of soils. When gravel predominates, we have a gravelly soil; when sand, we have a sandy soil; when finely pulverized or ground stone, we have the clay soil; when vegetable and animal matter predominates, we have the humus, or light porous black or brown soil.

All the higher or more useful forms of plant life are dependent upon the soil for an existence, and in turn all animal life is dependent upon plant life. Thus we are shown the importance of the soil to all life. Organic life springs from the water and soil, and largely to it returns. It is written of man, the higher animal, "Dust thou art, and to dust shalt thou return."

The composition of the soil largely determines the kind of plant life growing upon it. In addition to the plant food held in the soil the character of the vegetation is greatly affected by warmth and moisture; warmth and moisture are largely determined by the composition of the soil.

If we have a soil composed of gravel, sand, or both combined, we are apt to have a hot, dry soil in summer, supporting but little if any vegetation; if a heavy clay, it is generally cold and wet, or if dry, very hard and compact; if we have an excess of vegetable and animal matter, humus, we shall have a very porous, light soil, becoming hot and dry in dry weather, and in wet weather producing an excessive growth of vegetation on account of the presence of a great amount of nitrogen in such soils.

The composition of soils so much affects the growth of trees that we have come to know the character of the soil from the kinds of trees and plants growing upon them. Hence we speak of sugar tree, poplar, black walnut, beech and black jack soils.

As to fruits, experience has proven to us that soil and situation will to a considerable extent determine the varieties to be planted; for instance, we have learned that peaches and grapes do best on a light, warm, sandy or gravelly soil, while pears and quinces do best on a heavy clay.

For all practical purposes, the kinds of soil most common to our State may be described and located as follows:

The black alluvial soils, containing a large per cent. of humus, or vegetable matter, and varying quantities of sand and clay, and of varying depth, underlain with gravel or heavy clay, and to be found for the most part in the level and lower situations in the central, northern and western portions of the State. This character of soil is best adapted to growing the cereals, grasses and vegetables.

When the black, loose, surface soil is of moderate depth and underlain with a stiff clay, if such a soil be well tile drained, the tree fruits will succeed fairly well, especially apples, pears and plums. Some varieties of small fruits succeed very well on this kind of soil, but this character of soil is not congenial to a very great variety of small fruits.

When this black surface soil is of considerable depth, plants and trees do not seem to produce as good a root system as in the clay soils; it seems to lack the necessary mechanical conditions, as well as the conditions essential to the best plant and tree development.

The sandy, gravelly soils are, for the most part, found in the extreme northern portions of the State and along the water courses. The more clay and humus mixed with the sand and gravel, the better the soil for grain and fruits. If the soil be mostly sand, several inches in depth, underlain with gravel, unless the water level below comes within reach of the plants, in dry weather the soil becomes dry and hot and unfavorable for plant or tree growth. Such a soil is especially unfavorable for small fruit plants; these root near the surface and burn out in dry weather for want of moisture.

The sandy clay soils, or what are popularly known as sugar-tree soils, are pretty well distributed over the higher and more rolling sections of the State. This is our best general purpose soil. It usually has good surface and underdrainage, a sufficiently retentive clay sub-soil, with a surface soil of right proportion of clay, sand and humus to give the best mechanical and fertile conditions. Such a soil cultivates easily, holds moisture and fertilizers well, and under favorable conditions will grow well any crop of grain, grasses, or fruits we can grow in this latitude.

Then we have the level or low, heavy, wet, clay soils of the central portion of the State, popularly known as beech-tree soil. This soil usually contains but little humus, or vegetable matter, is a very heavy, compact clay, holding water almost like a jug, and wholly unfit for any kind of cultivated crops without thorough tile drainage and the addition of vegetable matter in the form of stable manure or green crops turned under. This land was regarded by the early settlers as unsuitable for farming.

With these improvements in the mechanical conditions of the heavy clay soil, and an occasional application of fertilizers, we can grow all our leading crops. Such soils are especially adapted to growing pears and quinces, as they do best on a heavy, moist, rich, clay soil. Apples, plums and cherries will succeed well, and small fruits, especially strawberries, will do well on this kind of land.

Closely akin to these heavy clay soils of the central portion of the State, are the white clay soils of the hilly sections of the southeastern part of the State, along the Ohio river. These, with the red clay soils of the hilly sections of the southern part of the State, make up our best fruit soils. They are especially adapted to the apple, peach, plum, blackberry and raspberry. I question whether finer apples are grown anywhere than can be grown on the red clay soils of the low hills bordering Orange and Lawrence counties. I have never seen finer blackberries and raspberries than are grown in these red clay soils.

Thus far we have had to do principally with the mechanical make-up of the soil. The fertility of the soil is as important as its mechanical condition. A proper condition of fertility is that condition where all the elements that enter into the plant's growth are readily available in sufficient quantity to meet every demand in the highest development of plant and fruit.

Through many years of cropping, most of our lands have become more or less impoverished. This is especially true of the clay lands, our best fruit lands. In the hilly sections they have become impoverished by washing and leaching, as well as by constant cultivation. An improper system of cultivation has not only reduced the fertility of our clay soils, but it has made the mechanical conditions less favorable by the removal of vegetable matter, and in this way they have become compacted or run together to such an extent as to have become lifeless and unfavorable to healthy plant growth. We should have a proper mechanical condition of soil, good drainage, and sufficient humus to make the soil loose and friable.

We will find that most of our fruit lands will be benefited by an application of the three principal mineral elements in plant growth, potash, phosphoric acid and nitrogen. Stable manure, with the addition of unleached wood ashes, makes a good fruit fertilizer for clay lands. This form of manure contains, readily available, all the necessary plant food, besides a quantity of vegetable matter that tends to better the mechanical condition by rendering the soil more porous.

Stable manures are open to two objections as a fruit fertilizer, first, the composition or strength is an unknown quantity, and we can not tell just how much of each of the important elements we are applying. The second objection is that stable manures usually contain too great a per cent. of nitrogen, and if applied heavily stimulate too rank a growth of plant at the expense of the fruit; and in the case of trees and shrubs, induce a late, sappy wood growth that is liable to damage from severe winters.

Probably the most economic and satisfactory fruit fertilizer is commercial potash and phosphoric acid and nitrogen, the latter when practicable through clover or leguminous plants. If the soil contains the proper proportions of plant food, the plants and trees will not only make a thrifty, vigorous growth, but the fruit will be more abundant, larger, firmer, more highly colored, and better in quality.

Chemical analysis shows that trees and fruits, especially the latter, vary in their composition; for instance, apples and peaches contain two and one-half times more potash than pears. This suggests that, in applying fertilizers, we should be governed somewhat by the proportion each class of fruits use.

One hundred bushels of apples analyze about 1 pound of phosphoric acid, 10 pounds of potash, 7 pounds of nitrogen. One hundred bushels of pears, 1½ pounds phosphoric acid, 4 pounds potash, 5 pounds nitrogen. One hundred bushels of peaches, 2½ pounds phosphoric acid, 13 pounds of potash, 6 pounds of nitrogen.

Probably for apples we should use of nitrogen 4 per cent., potash 6 per cent., phosphoric acid 2 per cent. For pears, nitrogen 4 per cent., potash 2 per cent., phosphoric acid 4 per cent. For peaches, nitrogen 4 per cent., potash 5 per cent., phosphoric acid 4 per cent.

For small fruits, generally speaking, the proportion for peaches is the best suited. If stable manures are used, the ground should be thinly covered early in the spring and worked into the soil. If commercial fertilizers are used, they should be applied in early spring to the general surface, at the rate of from 400 to 600 pounds to the acre annually. Annual fertilization by some method is essential to the highest success in fruit growing.

EVENING SESSION.

Tuesday, August 20, 7:30 p. m.

HOW MUCH AND WHERE SHALL WE EDUCATE OUR BOYS?

BY H. F. M'MAHAN, LIBERTY.

In a good many things we are agreed as to how much and where shall our boys be educated. Not one of us but would have every faculty of mind developed to the limit, every organ of the body perfectly developed. We would have our boys grow to be strong men—strong physically, strong morally, strong mentally. I think we are agreed that that education should begin very early in life. Long before they reach the school age we begin their moral and physical training, making sure they grow straight and strong, that, in so far as we can train them, their senses make quick and clear discriminations, and that honesty, industry, truthfulness and reverence for the right become habitual.

We are agreed, too, that every opportunity the common school affords shall be theirs. Even the most careless parents recognize the absolute need of this part of a boy's education. A knowledge of arithmetic, reading, spelling and writing are essential to success in any business, while language studies, history and geography are very necessary if our boys are to be capable, intelligent citizens. And just so many as have it in their power will send their boys through high school, believing the mental effort necessary to master higher mathematics, Latin, rhetoric and the natural sciences will better fit them to solve the real problems of life when they begin business on their own account.

If our boys would be merchants, lawyers, physicians, teachers, engineers, or wish to enter any of the so-called learned professions, we are willing to make all sorts of sacrifices, if need be, to give them special training in their chosen line of work. The genius may succeed without this special training. We know well enough that few of our boys are geniuses, and that if they are to have an even chance with the born genius, they must have every advantage the special school affords. Fifty years ago serving an apprenticeship was thought sufficient, thus gaining the experience of one, or at most a few, men. Today we would have our boys familiar with the learning of as many great minds as can be crowded into a college course.

It is not hard to find illustrations among successful men to prove the need of such training. Within the last few years a score of men I know, many of them from my own county, have risen to distinction who were college-trained. The college was not entirely responsible for their success, but the training it gave materially aided them in winning success.

I say we are agreed as to the common school, the high school, and special schools or college training for those boys who expect to become professional men. Now, what about the thousands of boys that are to succeed or fail on the farm? We'll agree, I suppose, they shall receive all the training the common school can give. A good many of us will not agree that three or four years in a high school will help a boy to farm. I fear we do not keep in mind that a school of any kind is to develop and discipline a boy's mind as well as to store his mind with facts. Now, do boys who expect to farm need well-trained minds, and would a great store of facts add to their chances of success, or is it enough to know "gee and haw and hoe potatoes?" We know they need well-trained minds and the largest possible store of facts.

Agriculture, until a few years ago, was always looked upon as a vocation—a business at which men worked with their hands only, while in truth it is a most difficult science. It has very much to do with life, both plant and animal, the most complex of all sciences, and probably the least understood. There are many questions relating to agriculture that directly affect the farmer's success that have not been definitely answered, nor will they be answered until many men who have had the training the best schools can give attempt their solution. When we know more of soil chemistry we shall be able to use fertilizers more economically. Our tile draining will be more effective when we know more of geology. Fruit growing will be vastly more profitable when we have learned the cause and cure of all the diseases that affect it and improve by rule rather than by chance, as we do today. When we know as much of the breeding of grains as we ought to know of the breeding of live stock, grain farming may pay. When each farmer knows the best adaptation of crops to soils we shall double and treble our yield. When supply and demand are better understood, gluts and famines, with all their ruinous effects upon profits, will cease to hinder us. We have yet to learn and use the power of combination. When farmers know more of political economy they will know and demand what is best in legislation for their interests.

I have a boy whom I hope will some day be an intelligent, successful farmer. Custom says he knows enough to begin farming when he has graduated from the common school, or even before that time, practically saying his father can teach him all he needs to know in addition to the common school course. But can I? I am busy early and late and I simply can not help him to get that mental training which even a high school would give. I know but little of chemistry, of geology, of pomology, of crop relations, of adaptations of crops to soils, of live stock husbandry, and the thousand and one other things a farmer should know to succeed. If I were to attempt it he would have but one man's experience. I can not depend on his learning of my neighbors; good farmers though they be, they can not give him mental training nor teach him that store of facts that would be of so much help to him. He might learn by reading and experience—good methods, but slow, slow. I believe it is my duty, if he wants to farm—and I hope he will—to prepare myself to be the best teacher I can of the best methods and practice. No one else can so effectually arouse his interest, teach him to be so fond of his profession. I hope nature studies will be a part of both the common and high school courses, not only for the store of facts, but it is the subject of all others that teaches most rapidly independent thinking. He already knows something of many plants and animals, and will all his life be surrounded by them. It is his right to know more of them. When he has completed the high school course, if he wishes to study law, or medicine, or theology, I'll help him get special training, that he may have an even chance with men in his profession to succeed. And I will not do the square thing by him, if he wishes to farm, if I do not give him a course in an agricultural college, or help him get it, for he will certainly need the information and mental training as much in farming as any other profession. Four years in a school where agriculture is honored, associated with earnest, intelligent instructors, who have spent their lives solving some of the many problems that must be solved before profits of farming can be large, making the acquaintance of young men and women who will be the leaders in the future of agriculture, will help to make him the most intelligent, the most prosperous, the most contented, the happiest man the sun will shine upon.

MORNING SESSION.

Wednesday, August 21, 9 A. M.

MARKET VARIETIES OF APPLES AND PEARS FOR SOUTHERN INDIANA.

BY C. M. HOBBS, BRIDGEPORT.

We have been shown how necessary it is to successful commercial fruit growing that the man, or the one who is to engage in the business, possesses the proper qualifications.

The next most important thing is the varieties of fruits to be planted. We may have the situation and soil well suited to commercial fruit growing, we may have perfect cultivation and care of the trees, but unless the varieties planted be adapted to the soil and climate, and to the market to be supplied, we can not hope for success. From this we see that the proper selection of varieties for commercial orchards is of great importance.

In driving through Mr. Burton's orchard, we saw a number of McAfee's Nonsuch and Lawyer that were practically barren of fruit. The trees of these varieties were as large, vigorous and thrifty as any trees in the orchard, yet Mr. Burton says they have never borne a profitable crop of fruit, showing their lack of adaptation to the locality where planted, and are wholly unprofitable. The success of the varieties planted is so dependent upon the soil and situation that it gives opportunity for great diversity of opinion as to the best varieties to plant; however, there are a few varieties of all of the different classes of fruits that seem to have quite a wide range of adaptation, succeeding on a great variety of soils and situations and under different treatment.

I presume there is no other variety of apple in cultivation at this time that has wider range of adaptation and is as generally profitable for commercial purposes as is the Ben Davis. There have been more Ben Davis trees planted in the past few years than of any other variety. Fortunately, the Ben Davis seems to have nearly every good quality except quality. It is an early and regular bearer, fruit of large size, good form and beautiful color, always attracting the eye, and as the masses buy through the eye, the Ben Davis sells well and at good prices. They often sell at five cents apiece on the fruit stands. We have learned that size and color are of first importance in marketing fruit, and on account of the characteristics mentioned, the Ben Davis for several years has been the most profitable apple grown in the central west.

For southern Indiana, a close rival to Ben Davis for profit, and in some localities superior to Ben Davis, is the Winesap, a good bearer of medium size, bright red, firm apple of good quality, and a good keeper. Southern Indiana Winesaps seem to be the finest in the world, as they took the premium over all others at the Paris Exposition.

Probably the next best apple for commercial purposes for this locality is the Rome Beauty, a fairly good bearer, fruit of large size, handsomely colored, and of good quality. I have seen some as fine specimens grown in southern Indiana as I have ever seen anywhere.

For the fourth variety of apple, a late fall and early winter variety, the Grimes Golden is without a rival as to size, color and quality. When the trees are well cared for the fruit is large enough, is smooth, and of a beautiful golden color, and the quality leaves nothing to be desired. To my own taste there is nothing superior to it in its season, or at any other season. It reaches its highest degree of perfection in southern Indiana as to size, color and quality. When I eat the Baldwin, Winesap, or most any other variety of apple, I know distinctly when the time comes to quit, but when eating the Grimes Golden there is still a doubt as to whether I should not eat another. However, the Grimes has two points of weakness —first is that the fruit matures rather early and is a little inclined to drop prematurely, and the tree seems to be rather susceptible to the fungous disease known as root rot. I think this matter of root rot could be overcome to a considerable degree by top-working on hardier roots and stems. We can not afford to give up the Grimes Golden on account of these defects, as its superior quality is being sought after, and it will sell, usually, considerably higher than Ben Davis and the more common sorts. This list of profitable winter varieties might be extended considerably. Possibly we might add York Imperial, Mammoth Black Twig, Jonathan, and some others.

As to summer and fall varieties, I think these should not be omitted from the commercial orchard. My observation and experience in the Indianapolis market for a number of years has been that good summer apples bring as good, or better, prices than winter apples at gathering, selling at from 75 cents to a dollar a bushel. There is usually a scarcity of first-class summer apples in this market, and we can see no reason why they can not be profitably grown, as the trees of the summer varieties bear more regularly than do the winter varieties. It seems they mature their fruit so early in the season they have vitality left for developing fruit buds for the next year's crop, hence, bear more regularly than the winter varieties which hold their crops until late in the season.

The varieties we have found to be most salable and the most profitable are Red Astrachan, Early Harvest, Yellow Transparent, Benoni, and Summer Red Stripe; and for fall apples ripening later in the season, the Maiden Blush and Wealthy have been very satisfactory. We recommend the Benoni especially for family use and market. The tree is hardy and a prolific bearer. Fruit of medium size, highly colored, yellow striped with red, with very high quality. It ripens gradually in three or four weeks' time, and will keep for a week or ten days when taken from the tree and put in the cellar. One of the faults of this variety is that of overbearing. They should be thinned somewhat in order to get the best size and quality of fruit.

The Yellow Transparent is a hardy tree, coming into bearing very early. Is a large, fine appearing, greenish yellow apple, cooks well, and is a very satisfactory market apple.

The Red Astrachan ripens before the Yellow Transparent and Benoni, and on account of its earliness, bright color, and good cooking qualities makes a very desirable early market apple.

The Summer Red Stripe is rather larger than the Benoni, a few days later in ripening, fruit is sharply conic, and is sometimes known as Sheepnose. This is a hardy tree, prolific bearer, and the fruit sells well.

For a fancy late summer apple, probably there is nothing more showy or attractive than the Chenango Strawberry; it ripens about with Summer Red Stripe, looks very much like it, but the tree is quite different in appearance, the fruit is more highly colored, and the flavor is quite different from that of the Red Stripe. On account of its attractive appearance it brings the highest price at the eating stands.

The Maiden Blush is generally known, and needs no detailed description here. It covers three or four weeks' period in ripening, and is highly valued as a family and market fruit.

The Wealthy ripens pretty much the same time as the Maiden Blush. Tree very hardy, an early bearer, productive, fruit large striped with bright red, a good cooking apple, and a very pleasant apple to eat when fully ripened.

For a fall apple of superior quality, probably there is nothing better than the Gravenstein, and for a late fall apple we have also found the Pewaukee desirable. The tree is hardy, bears well, fruit of good size, striped with dull red, cooks well, and sells well.

As to pears for southern Indiana, the list is necessarily very much restricted, as on the light soils of southern Indiana the pear blight is much more destructive than in the heavy clay soils of the central portion of the State. I suppose there has never been much profit in pears in southern Indiana until the Kieffer came in; this variety has been very extensively planted, and has proven profitable wherever planted.* Even in the central part of the State we find varieties like Clapp's Favorite, Flemish Beauty, Bartlett and others blighting badly; in fact, we can no longer recommend Clapp's Favorite on account of its tendency to blight.

Of the older sorts of those planted on our place in the central part of the State twenty-six years ago, the Tyson and Buerre d' Anjou have proven freest from blight; in fact, the Tyson have not blighted at all. This is a remarkably hardy, fine tree, bearing a medium-sized greenish yellow pear of the highest quality, ripening the last of July. The Tyson trees are the largest and healthiest trees in our orchard. The Anjou, while it blights but little, has the fault of shedding its foliage early in the summer and not properly ripening up the fruit on this account. It is also very tardy in coming into bearing, and we do not expect a good crop of fruit off of the Anjou under fifteen years.

With us the Duchess Dwarf has been the most profitable among the dwarf pears. We have trees of this variety that were planted twenty-six years ago that are still healthy and bearing good crops of fruit. They were planted eight to ten inches below the union of the quince stock.

We have also found the Louise Bonne to be profitable as a dwarf pear.

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* The Kieffer is beginning to blight some along the Ohio river and occasionally farther north.

STONE FRUITS AND VARIETIES.

BY U. M. STEWART, MADISON.

[Stenographer's Report]

I am going to read the names of the peaches that are grown in our section of the State: The Gainesboro, Snead, Alexander, Early Rivers, Old Mixon, Mountain Rose, Elberta, Globe, Salway, Heath and Triumph.

The Gainesboro is one that has been tried by but one person that I know of, and fruited just one year. It is a very promising sort and very early. The Snead is very profitable, ripening in July. The Alexander is well known everywhere, ripening about the same time. The old Mixon is fairly good, bears very well and is a fine looking peach. The Mountain Rose is our standard variety. The Elberta is planted by lots of people; they all want that peach for money; it carries well and sells well everywhere. It sells just like the Ben Davis apple, on its appearance, but inferior in quality. The Globe is good, but a shy bearer. The Salway is an October peach, grown in large quantity and gives good satisfaction to everybody that wants late peaches. Just like the Heath, they ripen about the same time. The Triumph is one recommended by Mr. Reed, but is not promising in our section.

The finest plums in our section are Moore's Arctic. The Damson is the second favorite of Mr. Hicks. The Lombard sells well in our section. This is a plum year. The Shipper's Pride is another very fine plum. The Lincoln is a large plum and very good quality. The Washington is a good plum, but not a sure bearer. The Raincloud is of high quality and a prolific bearer. The Robinson bears well, is good quality, but is small.

The first cherry is the Early Richmond. It isn't very profitable because it comes during strawberry season and people are not ready for cherries. There are lots shipped away. The Dyehouse doesn't bear quite as freely. The Montmorency is the one we make money on. The Black Tartarian is a profitable cherry with us, and also the Governor Wood.

SOIL FERTILIZATION.

BY S. M. HUSTON

(See South Bend Meeting.)

SPRAYING AND SPRAYING MIXTURES.

BY S. H. FULTON, MICHIGAN.

No copy obtained.

THE APPLE AND HOW TO GROW IT.

THE SOIL.

BY JOE A. BURTON.

Soil can scarcely be too rich for an apple orchard. Our richest soils are generally bad for apples. Our best apple lands are generally very thin. They are not good because they are poor, neither are the rich soils bad because they are rich. It is a matter of texture and location. Other things being equal, elevated land is best. By this we do not mean far above sea level, nor mountainous, but just a little above adjacent land. Of all soils, the alluvial drift is the worst. Sandy soil might be classed next. The very best of all is elevated clay formed by the decay of the native rocks. Soil is more than location. Heavy clay in the valley is better than drift loam on the hilltop. Hence, in central Indiana, the best apple lands are the heavy clay swamps. Apple trees winter-kill in the central part of our State more than in the southern on account of the nature of the soil, rather than by a greater degree of cold. Apples on heavy clay are very little affected by drought, whether cultivated or not. Hence, in a season like this, we have fine apples on our thin clay lands, while our ordinary farm crops are nearly destroyed. Because these thin clay lands have an aptness for producing apples, we must not infer they can continue to yield fine crops without being fed. My father-in-law was an expert in farm work, but in the last thirty years of his life could do nothing for lack of physical strength. So these lands can not yield their crops for lack of phosphoric acid and nitrogen. They have abundance of potash. Without fertilizers they will yield a few fine crops, then both the tree and fruit grow smaller, the limbs die, and failure is the result. Not only are the trees hardier and healthier on the heavy clay soils, but the fruit in every way is better, larger, keeps better, smoother, better color, and better quality. Why these lands have such an aptitude for apples is not known—possibly on account of the great amount of potash in the clay.

PLANNING AND CARE OF THE ORCHARD.

BY WILL RITTERSKAMP.

No copy of this paper procured.

CARE OF A BEARING ORCHARD.

BY. W. C. REED.

No copy of this paper obtained.

PACKING AND MARKETING FRUIT.

BY E. S. GOFF, WISCONSIN.

[Abstract.]

Fruit growers, as a class, pay too little attention to the selling of their fruit. They have not learned the fact that selling fruit is as much an art as the raising of it, and that the profits of the fruit plantation may depend as much upon the skill employed in selling the fruit as upon the production of it. Professor Bailey has made the statement that there are ten men who are able to raise choice fruit to one that is able to sell the fruit to the best advantage. This may be too strong a statement, but there is much truth in it.

Last season I knew of a fruit grower that sold his crop of apples before the first of September at a price of 80 cents net per barrel. At this time the grower had a very crude idea of the amount of apples there were in the country, or whether the price at which he contracted his apples was a fair one or a ridiculously low one. He simply listened to the arguments of the buyer, and, because his statements sounded plausible, he accepted them. The buyer packed a considerable part of this crop in bushel boxes, which he sold in Chicago at from $1.50 to $2.50 each. This was equivalent to $4.50 to $7.50 per barrel. Of course, another part of the crop did not yield so much, but the poorest marketable ones brought much more than 80 cents per barrel. This poor sale was made because the fruit grower was not posted on either the apple crop or the markets.

With the excellent agricultural newspapers we now have, there is little excuse for a fruit grower remaining ignorant on these subjects. Some of our leading papers make a special effort to inform their subscribers on crop and market prospects, and a fruit grower has scarcely more excuse for being ignorant on these matters than has the merchant for being ignorant of the market value of his goods.

Another way by which fruit growers often come short of their opportunities is by putting their fruit up in an improper manner. Second-hand barrels, putting the best fruit at the top and bottom of the barrel, and mixing poor and good fruit in the same barrel all tend to reduce the market value of the product. A buyer is not readily deceived as to the contents of a barrel of apples, but in making an offer for it he generally offers about what he regards the poorer samples worth. He can not afford to do much better than this.

Another way by which the fruit grower may reap an advantage is by putting his name on the barrel. This tells the buyer at once that he is not ashamed of his fruit. In the commercial world a sample of goods offered without the manufacturer's name is always regarded with suspicion. I know of an instance where a man sold his crop of apples at a fine price by simply stenciling his name and address plainly on some barrels of early fruit that he had shipped to market. A commission man traveled over a hundred miles to find his orchard.

Adjourned.

Indiana Midsummer Horticultural Institute,

UNDER AUSPICES OF THE

STATE HORTICULTURAL SOCIETY

AND

PURDUE UNIVERSITY SCHOOL OF AGRICULTURE,

AT

SOUTH BEND, INDIANA,

Thursday and Friday, August 22 and 23, 1901.

By invitation of the Noble County Horticultural Society the second midsummer horticultural meeting, under the auspices of the Indiana Horticultural Society and Purdue School of Agriculture, was held at South Bend, Thursday and Friday, August 22 and 23, 1901. The meetings were held in the Auditorium Annex. A fine display of fruit was made by the local fruit growers.

After some appropriate music and an invocation by Rev. P. J. Rice, President Hobbs introduced Hon. John B. Stoll, who delivered the welcoming address in these words:*

Ladies and Gentlemen—It affords me great pleasure to welcome to this city the representatives of the Horticultural Society of Indiana and adjacent States. It would afford the citizens of South Bend the greatest pleasure, indeed, to have you, if you could, devote some of your time to a trip about the city for the purpose of becoming familiar with the things of interest that we have here, but we realize full well that you have come here for a greater and a more important purpose, namely, that of considering and discussing the various subjects that have been mapped out for the deliberation of this meeting. We would be delighted, indeed, to offer you an opportunity to visit some of our gigantic manufactories, notably those that pertain to agriculture and horticulture. We would be delighted to have you see the manner in which the plow is made, to cultivate the fields and the orchards, and would be delighted to have you gaze upon the wonderful and marvelous machinery by which wagons are turned out by the thousands, for the purpose of transporting the products of the farm and the orchard; we would be delighted, indeed, to have you gaze upon our principal mercantile establishments; we would be delighted to have you look at our homesteads, with their well-kept lawns, and see the care that has been exercised by our people in planting trees wherever there is room for them; we would be delighted to have you take a general view of this cosmopolitan city, that you might gain something of an idea of the achievements that have been wrought during the past fifty years. But, as I said before, we know that you have not the time. But let me assure you that, while we would be glad to have you see all the notable things that South Bend presents, we, as a people, are more, much more, interested in the consideration and the discussion of the important subjects today before you.

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*The proceedings of this meeting is from the stenographer's report.

A great deal depends upon meetings of this character, upon the solution of problems, upon the discovery of methods helpful to the husbandman in carrying on his occupation. We realize that in horticulture, as well as in other businesses, obstacles are to be overcome. That is what we are here for. This is pre-eminently a nation to overcome obstacles—obstacles seemingly unsurmountable. Obstacles had to be overcome when the tree of liberty was first planted by the founders of this government; obstacles had to be overcome during the past hundred years, too great, too vast for me to enumerate. Obstacles must be overcome in building up our orchards and affording the people an opportunity to get and to use what every household so greatly needs, namely, fruit of every description.

I sincerely trust that your stay in this city will be one of uninterrupted interest, not only to yourself, but to the thousands of people who will be afforded an opportunity of reading what you may say and what you may determine during the progress of this meeting. And now I desire to state in this connection that I am limited to seven minutes, therefore you will understand I have said practically all that I shall have to say; but permit me to say that scientists have of late applied their agency to the introduction of wireless telegraphy to convey messages far and near. For this special occasion, in order to conform to the limitations imposed upon me by Brother Latta, I take the liberty of introducing my innovation by liberally, though only figuratively, drawing upon all the welcome addresses ever delivered in this broad land of ours to shower upon your intellectual brows all the sweet, gracious and pleasing words uttered by superior orators, in prose and in poetry, with the consciousness that no welcome thus extended can have been more hearty, and no greeting more cordial than this we have herewith extended to you individually and collectively. (Applause.)

President Hobbs: Ladies and gentlemen, we will have a response to these words of welcome by Prof. W. C. Latta, Superintendent of Farmers' Institutes.

Prof. W. C. Latta responded as follows:

Mr. Chairman, Ladies and Gentlemen—I lay no claim whatever to being a platform speaker, and that, at once, will raise in your minds the question why I am here to respond to this address of welcome. I may say, briefly, that I thought it would give me an opportunity to explain somewhat the conditions under which we meet and the scope or purpose of this meeting.

On behalf of the persons whose names appear on the program which is to be rendered today and tomorrow here in your presence, on behalf of the visiting horticulturists from other portions of the State, I thank Mr. Stoll for these kindly words of greeting. I am sure that they are as pleased as I am to come to this beautiful city of South Bend, noted for its enterprise—indeed, for its public spirit, for its large and successful meetings. South Bend was chosen for this meeting because it was believed that here we would find the conditions favorable to a successful meeting, and I am sure we shall not be disappointed. It is pleasing to note the preparation that has already been made by, I suppose, people in the near locality, in the way of fruit exhibit. It is quite an undertaking, with no fruit ripe, you might say, to draw on, but I am sure that the friends who are here visiting, as well as myself, appreciate what has been done in that line. It is a splendid exhibit; it is a splendid showing.

And now, just a word or two of explanation, and I shall have performed the first imposed duty. The Horticultural Society was on the eve of abandoning these summer meetings, which it has been holding regularly for a good many years. The reason for that course was lack of funds. Fortunately, the increase in the appropriation for farmers' institutes became available with the Governor's proclamation that we should have an increase for the current year at our disposal. It occurred to me that perhaps we could not make better use of that fund than by holding, in different parts of the State, district meetings, devoted to certain special institutions in our State. Accordingly, four of these meetings were planned, of which two have already been held; the first one, a district dairy institute, at Plymouth; the second, in southern Indiana, at Orleans, which closed last evening; the third meeting we have here today and tomorrow; and the fourth, a meeting of the stockmen, especially those engaged in producing butchers' stock, at Huntington, on the 27th and 28th of this month.

It is something of an experiment to undertake meetings of this kind, in the heat of the summer. While the audiences have not been large, averaging, I think, something over one hundred for the five sessions held, the interest has been admirable, and we are hopeful that much good will be the result. We have no question as to the outcome of these meetings held in this center; and with such admirable local co-operation as we have already had, I feel entirely safe in prophesying that we shall have a pleasant and profitable meeting.

One of the gratifying things in regard to these meetings is that, notwithstanding the fact that ladies have hardly had representation on the programs at all, so to speak, yet ladies have been conspicuous by their presence, and in some cases, perhaps, exceeded the gentlemen in numbers. That, to me, is one of the encouraging things—that the women are taking an interest in these meetings, and an interest in agriculture and horticulture, live stock and dairying. The time was when it was very different. I don't know how it was in this particular county, but I know I went into county after county, when institute work began, a little more than a decade ago, when the attendance was made up almost exclusively of gray-haired men; no young men, few middle-aged men, but a lot of old men in the reminiscent stage of life, and frequently not a woman to be seen.

What a change has been wrought in these years! How much it offers for the future! To me it is a very gratifying thing that the ladies come out to these meetings, and that the young people are showing themselves in greater and still greater numbers.

I should like, before taking my seat, to make this appeal to you. Perhaps it is not necessary, and yet it is in my heart to say this: That the good, or permanent good, to result from this meeting, will be its effect upon the rising generation. The older people will not be able, even though they may desire, to change their methods appreciably. With them, things will still go on in very much the same way as they have heretofore. We look to the young people for the adoption of the new and the better ways. And so I would like to ask that you see to it that the young boy, that the young girl, that your children find a place at these meetings. I am sure that they will be interested. You do not know, perhaps, how much interest a boy ten or twelve or fourteen years of age will take in matters of this kind, if he is present; so I bespeak for the boys and the girls that they have a chance to attend this session; I know they will be interested and profited, and I know that through them will come the lasting benefits that we hope to secure. (Applause.)

President Hobbs: We are indeed very glad to have with us Prof. S. H. Fulton, of South Haven, Mich. Mr. Fulton has charge of the experiment station at South Haven, and is very capable, indeed, of instructing us on the subject for which he is on the program this afternoon; that is, "The Apple and Pear; Planting and Growing Them." I have the pleasure of introducing to you Mr. S. H. Fulton.

Mr. Fulton said:

Mr. President, Ladies and Gentlemen—In coming into this auditorium this afternoon I felt encouraged in what I have to say by seeing the fruit upon the tables in the back part of the room. It shows to me you are interested in the subject to be discussed, and it shows, by the display of fruits, that you are actively engaged in the work of fruit culture. Coming, as I do, from Michigan, I naturally thought that we have a pretty good fruit State there, better than your State; but I will have to come down a little and say that I now think, and know, that it is a fact that you have gotten together as good an exhibit here as we could have gotten together in Michigan, at this season of the year, and we have been collecting for Buffalo for the last two or three weeks or more, so we know pretty nearly what can be gotten in our vicinity.

I think, too, that the subject under discussion is a profitable one to us, particularly in the line of apple growing, because I do not believe that there is any fruit at the present time which has a brighter outlook for profit and reward and in other respects, than has apple growing, and I will again draw upon my own State as an example in this respect.

Michigan, as you know, has been regarded as one of the leading apple States, and while it is one of the leading apple growing States, I must confess this afternoon that three-fourths of the apple orchards in Michigan are not kept as they should be. Three-fourths of the entire acreage of apple orchards of Michigan are located in the lower four tiers of counties of the State, and it is a rare thing to see in these counties new apple orchards being planted. Occasionally a man sets a few trees out, but it is a rare thing to see trees—new trees—planted. The old orchards have been neglected, have been used for pastures, have been used to grow timothy and other hay upon, and have been used for cow pasture and other purposes aside from fruit growing; the orchards are neglected and are on the decline. In the northern part of the State some new orchards are being planted, and some of quite considerable areas, but throughout the lower part of the State there is but very little new planting being done.

What does this mean? I think it means simply this: Michigan will not be able to maintain her good record as an apple growing State, unless some change is made in respect to the growing orchards and the planting of new trees. It shows to us, also, that there is a great possibility within reach of the man who will set out an apple orchard and give it good care, because, since these old orchards are declining, it is only a matter of a few years when they will be gone, and unless there are new orchards to take their places there will not be the supply of fruit. The fruit from a new orchard will always sell to better advantage than from an old one.

Beginning on the new subject, I will state that I will endeavor to consider the two kinds of fruit together, perhaps mentioning some things in connection with the pear especially, a little later, for it can be done and it will save time.

In planting a new orchard, one of the first things to be considered is the location of the orchard. In this connection I believe the first consideration should be the elevation—not necessarily high, but such a degree of elevation as will insure drainage. Drainage, above all other things, is necessary. If the roots of the tree stand part of the year in free water, the trees fail to do well; they decline and finally die out, or produce very little good fruit. Of course, this can be somewhat remedied by drainage, but the drainage should be done before the trees are planted.

The character of the soil does not matter so much in the section from which I come; I will not make that statement as to other sections, because I am not posted as to how it is here. There are those here who will, no doubt, tell us the best soil in this section upon which to grow apples. In the section from which I come I have seen some very fine orchards on light, sandy lands, but usually the sandy land is not considered good for growing apples; but one of the best of our orchards, the best in the vicinity, is on sandy land. It has been given a little better care than some orchards on some clay land, so this may, in part, account for it. The question of soil I will leave to be settled by some one who is better posted as to the conditions as they exist here.

A great deal is said at the present time as to a hardy class upon which to top-work the weaker varieties. There are certainly a good many varieties in this connection. The Spy has been quite largely recommended, a two or three or four-year-old from the nursery. That tree makes a good growth. Bud in the summer and graft in the spring. Some prefer to graft and some prefer to bud and graft, too. There may be some objections to it we don't see now, but there are a number of advantages I would like to mention. One advantage is that on the straighter, stronger, more vigorous stock, often we can work some of the weaker growing varieties. For instance, the Jonathan, which is not a very strong grower, may be top-worked upon the Spy and a better body procured for it in that way.

In procuring trees from the nurserymen there are sometimes mistakes made as to the name, and when the trees come into fruiting they are not always absolutely first-class, or we may find that we have not the variety that we ordered. When we top-work them, we can go to some tree we have known for some time, and now produces good fruit, and procure buds to do top-work with. It has been said, but I am not certain, that trees can be brought to earlier bearing by getting wood for grafting, or buds for budding, from trees now bearing.

It may be better for forming the head, in some instances, that we look out in this connection, and I want to say a word in favor of low heading of apple trees. I believe the trees in a great many old orchards have been headed too high; it is more difficult to pick the fruit, to spray the trees, and there are a number of disadvantages in having the trees headed too high. The only disadvantage in low heading is that it is more difficult to cultivate the trees, but with the tools that we have at the present time for working orchards we can usually work close to the tree, and so this objection is done away with.

After the trees have been procured, the matter of distance will have to be considered; that is, after the ground has been prepared for planting. And I should say a word in regard to the preparation of the soil before speaking of distance. The soil should be carefully prepared. To begin with, if there is a hard subsoil it should be broken up. In the section from which I come very little preparation in that respect is necessary, because it is usually loose so the roots can readily make their way down into it; but where there is a hard subsoil it is always better to break it up; it is better to have the ground in condition before the trees are planted. You should have the ground in as good condition as you would like to have it for a crop of corn.

We are more liable, in planting, to plant too close together than too far apart. You can see, all over the country, orchards that have been planted too close together; the branches interlock and make it difficult to spray the trees and to prune them, and the trees can not get enough sunlight and air. By setting them a greater distance apart we obviate this difficulty. I know of the same difficulty of close planting in Cheboygan county. Several, one of which must have been planted within the last four years, were planted twenty or twenty-two feet apart, I am not sure which. I have to have a grower to prune those trees each year, and this keeps them within bounds; but those who have to prune apple trees and apple orchards will appreciate that this means a task. He has, at the present time, 16,000 trees; he is a doctor and can not look after the orchard very closely himself, and has to rely upon help, and so we see there is likely to be an objection. It may be that these trees will meet and interfere with each other; at least, the indications point that way. I believe we really should give the trees greater distance—say a distance of forty feet apart.

Mr. Swaim: Do you not think that the planting of trees so closely will shorten the life of the tree?

I am not sure as to that. I know in the pruning of peach trees that some claim if you prune them each year it will shorten their lives; yet, I believe usually it is the contrary or the reverse. Of course, this might not hold true of the apple. In pruning a tree, we thin the tree at the same time. If the trees are not pruned, they bear out on the large branches and break down; that would more likely be the case, and it would be difficult in high trees to look after them properly and yet leave the large branches on, and it is always detrimental to a tree to have the large branches removed.

In regard to the pear, the distance for planting the standard pear, as a rule, should be from twenty to twenty-four feet apart, depending some upon the variety. For the dwarf pear, the distance usually recommended is ten to twelve feet, but that is not the distance in our locality. Some are planted sixteen feet apart, which haven't enough room, and I do not think sixteen feet is any too great a distance for a dwarf pear.

As to the selection of varieties, this, as I have before said, as in the case of the apple, will have to be decided upon by those here present. I notice in the rear of the room a number of varieties which are very productive; no doubt they are the same varieties that grow in our section, and you, no doubt, have some varieties which do better with you than they would do in our section. So you must be the judges in that respect, I not being posted as to the varieties which will be the better producers in this location.

Now, as regards the cultivation of the orchard, as a general thing, I think you will all agree with me that clean culture is the best treatment that we can give an orchard, either an apple or a pear. There are some exceptions to this, however. In the section from which we just came, down to this meeting, near Orleans, Indiana, they find if they keep the ground too clean and allow no vegetation to grow, there is danger of the land washing, and gulleys will be cut out. I was in one orchard that had been injured very much in that way; so it is impracticable to give as clean culture to their trees as we would in Michigan. I don't know about this section.

In regard to clean culture of the bearing orchard, there are also some drawbacks. When the trees are too highly cultivated there may be greater danger of blight. The conditions of a young orchard are necessarily a little different than a bearing orchard, either in the case of a pear or apple. Of course, where the trees are a considerable distance apart, and there is room for planting some crop, not a hay crop, but such as corn, the ground between the rows may be utilized and the cultivation of it kept up between the rows thoroughly.

I don't want you to think that this cultivation of the orchard should cease after the trees get a good start and are growing nicely. I don't think there is any time in the orchard when good care is more essential than in the first few years, but it should not be neglected after that. It is a very common occurrence for a man to plant a young orchard and the first few years, until it is growing nicely, take very good care of it, and when the trees are about ready to bear fruit, neglect it, cease cultivating it, and turn the stock in to do the pruning.

I remember on a trip last year in Alpena county, of passing an orchard of four hundred apple trees, nice trees, which would have been in good shape for bearing, but the owner had turned in a flock of sheep, and every one of the trees was peeled from the ground up as high as the sheep could reach. That is too often the case. A man spends money for trees, he puts them out, and then neglects them.

As to the care of the bearing orchard: The apple orchard, the old orchards, have usually been allowed to grow up in grass sod and been used for pasture. The cultivation should be continued for the moisture alone, if for no other purpose, and when an apple tree is attempting to mature a crop, it draws heavily upon the moisture, and sod land in dry time is always very dry; so it will be impossible for these trees to get enough moisture; so that even where there is moisture, in a great many instances it would be well to continue the cultivation.

There are other things to be considered. There is the subject of spraying, but as that subject is a broad one, it will be dealt with at length by Professor Webster later, and I will simply touch upon it a little. I do not think there is any operation in orcharding that is more essential than spraying, at the present time. We all know of the pests of the orchard, and it is only a question of time when they will get the best of the orchard and crop, unless we dispose of them in some way. The Bordeaux mixtures are the most effective, and paris green or arsenic of lime, used with the Bordeaux, is very good.

The treatment of the pear and the apple should be about the same, so far as spraying is concerned. We have the same pests and the same insects to contend with. The spraying should be made just before the buds open. The practice of spraying with copper sulphate while the trees are still dormant has been recommended and practiced.

Professor Burrough, in his discussion of the apple scab, says the fungi does not winter up in the trees, but winters over on the fallen leaves, and does not attack the growth of the tree until about blossoming time. If we spray at this time with Bordeaux mixture we will get more effective results than with copper sulphate later. But, of course, there is this difficulty about spraying at that time: If the weather is warm, the blossoms come out very rapidly, yet sometimes we have quite a number of days in which the spraying could be done, but it is not well to delay it too long. I know there are some who advocate spraying when the trees are in blossom, but I am not prepared to state just what is best about this. In some States there are laws against spraying at this time. In New York State they have been experimenting in this line some with conflicting results. In a great many orchards some spray while the trees are in blossom, and some while the trees are not, with very good results. It is a matter which needs more study and investigation.

After the fruit is set will come the next spraying, and the most important of all, in both the case of the apple and the pear, particularly in the case of the apple. For a week or ten days after the fruit is set, and sometimes longer than that, the blossom end is open. As most of you are aware, the larva enters at this end, and if the spraying is done just after the blossom falls the fluid will enter the little basin, and when the worm enters he will usually be destroyed at its first meal.

As to later spraying, I am not prepared to say as to the number. Further investigation is also needed along this line, and I don't know as we will ever be able to settle it definitely, conditions are so different, and conditions of the weather, of rain shortly after spraying, and so on; rains may make it necessary to spray again before long.

As to controlling the second brood, it is a more difficult task. After the apples are as large as hickory nuts, the spray falls off, and it is impossible, almost, to get enough poison to adhere. The second brood is not so particular where it enters the fruit. The first enters at the blossom end, but the second may enter at any place; wherever something leaves a place, it makes use of that place of access to the fruit.

As to pruning, the young trees should be carefully pruned, leaving, in the first place, enough branches to form a good head in four or five years in the case of the apple, and possibly more in the case of the pear. The growth should be headed off a little each year, to make a better build. The top ought to be left somewhat open, and not too many main branches left. In our trial orchards at South Haven we have found, as the trees become older, we had to remove the large branches in many cases, which is not good for the trees. If this pruning is continually kept up it will not be very difficult, ordinarily, to trim an orchard in the spring. In trimming an orchard it is well to avoid removing large branches as much as possible, but where it becomes necessary, as it does sometimes, that large branches should be removed, with a view of healing over as quickly as possible, I believe it is well to cut close to the body of the tree, leaving a larger wound at first. Where a stump is left, in trimming an old orchard, disease is apt to take place and shorten the life of the tree; but where cut down close to the main branch or trunk it leaves a large scar, ordinarily, but it will heal over sooner, and, as Professor Bailey says, you will not have a monument left there in memory of the branch.

I thank you for your attention.

DISCUSSION.

Mr. Hobbs: The discussion of this topic is now in order. We shall have a short time for discussion, and I hope that there will be the greatest freedom used in asking questions, both by experienced and inexperienced. The only limitations there will be to these discussions will be that of time, and if you wander from the text you may expect to be recalled.

Mr. Rupel: I would like to ask, is a three or four-year-old Spy not a pretty old tree to tackle?

Professor Fulton: I might better have said a well-grown Spy. It usually takes about two years to grow in a nursery, and perhaps I might better have said a well-grown Spy.

Mr. Rupel: I think one-year wood preferable.

Professor Fulton: That is all right, if one prefers it.

Mr. Rupel: I should think about four years old for grafting, and about one year for budding.

Professor Fulton: Yes, a two or three-year-old tree does very well, ordinarily.

Member: I would like to ask, Professor Fulton, in this connection, whether from your experience the Spy is, by reason of its freedom from attacks of root rot, or woolly aphis, and its general vigor and strength and desirableness, superior to other varieties?

Professor Fulton: I don't know that it is superior. Our experience with the Spy stock is limited. The trees that we work in this way are young. It is true that they are doing very nicely, but as to how well they will continue to do, I would not say from our experience, but only from the light of experience of those who have practiced this method and who have used this tree as a stalk. But I do know that the Spy, being such a vigorous, strong grower, is commonly used for this purpose; but there may be some varieties preferable to the Spy, because of its vigorous growth; I do not say there is not.

Mr. Rupel: Is what you call the Spy from the Spy seed, or from a root grafted?

Professor Fulton: It is procured from the nursery, and it would be a Spy grafted upon a seedling, a Spy top; just the body would be the Spy.

Professor Hobbs: I notice Professor Bailey recommends the Spy root as being comparatively exempt from woolly aphis. This, in the southern part of the State, or south of the Ohio river, is a very serious question; in this part of the State, farther north, it is not of so much importance. because we have cold and severe winters.

Professor Fulton: Our experience with the younger trees is that they are not wholly exempt from attacks of woolly aphis, that there are very many other varieties of trees quite as vigorous as the Spy.

Professor Hobbs: The question in my mind is as to whether it is necessary to single out this particular variety to make a stalk for top-working, but I suppose it will take more time and experience to settle the question definitely and satisfactorily.

Mr. E. S. Smith: In regard to the effect of grafting on its early bearing or late bearing, it is claimed by some that late bearing stock will have its effect upon the grafted stock, and that the Spy grafted in that way, when the Spy is used as a stalk, will not come as early on the stalk as an earlier variety. Has it been your experience to determine whether the Spy is a favorable stalk as to that?

Professor Fulton: Prof. E. H. Powell, of Plymouth, has done some experimenting along this line, using a number of varieties of stalks, and his experience has been that it has not made a great deal of difference. I don't know, however, that it has been thoroughly tested and demonstrated; I think that it has not.

Mr. Swaim: The Professor states that the fungi does not winter on the tree, but winters on the fallen leaves on the ground beneath the trees. That being the case, would it not be effectual to use the spraying solution of copper and sulphur in the fall and winter upon the ground underneath the trees?

Professor Fulton: It might do some good, but the fact that the foliage blows about so in the fall winds, and often falls in fence corners and out-of-the-way places, the disease that should continue to live upon it that would be blowing around, would, I think, offset any good that may have been done in that way, and I think it would be much better to wait until just before blossoming time and then spray.

Mr. Kingsbury: I would suggest that to do that successfully one would have to hire a small boy to turn the leaves over for him, that they might be sprayed on both sides. I desire to ask one question. As I was coming down this morning on the train, there sat opposite me a gentleman connected with the Atkins Saw Mill Works, of our city, and in a conversation with him he made a statement that surprised me very much, in regard to the apple orchards in Michigan. He said that they had an agent employed at their factory to gather up apple trees and stumps wherever they could find them, and that recently he had brought down several carloads from Michigan. I said, "Are they old, dead trees? He said, "No;" that they had been cut down, and the hard parts separated from the balance. I said, "You will destroy the apple orchards of Michigan," and he said, "The farmers over there have got an idea that they can make more money out of peach growing than they can out of apple growing, and they are destroying the apple orchards in many places, entirely." I want to know if this is correct—that the peach is a more profitable fruit than the apple. Are not they very wrong in the thought that the fruit growers in Michigan are making less money on apples than on peaches because apples sell for two prices? I think it is just a notion, and that they will make a mistake, because peaches are so very plentiful they are hardly worth shipping at times. Is that the general impression that peaches are more profitable than apples in Michigan?

Professor Fulton: I am not prepared to say that it is so. I am not informed as to this matter of digging out trees. I have not seen that being done in the section from which I have come, and I have not heard of it before. I think the reason apples have not been profitable to some is that the orchards have not been given good care. Where the orchards are well cared for, I think that, acre for acre, taking one year with another, the apple is as profitable as the peach. However, I am not prepared to say that as a fact. We have an orchard closely located to South Haven, in which there are about three or four hundred trees—not a very large orchard. That orchard has been carefully cared for the last three or four years, pruned, sprayed and plowed, and it has produced each year, since it has been given that treatment, a satisfactory crop. The crop has been sold this season upon the tree. The buyer was a Chicago fruit dealer, and he did not even come to examine the condition of the crop. He asked if we had as much as we had two years ago when he bought the crop, and we said we did, and he bought the crop without seeing it. I mention this as one instance in which the profit is extremely good. I am not prepared to say the apple is in all instances as profitable as the peach, but even in our neglected orchards they have often been the most profitable part of the farm. It remains to be seen, if given good care, what can be done. The market is always good for good apples.

President Hobbs: The next number on the program is "Feeding the Trees," by Professor Huston, State Chemist, Lafayette. I have the pleasure of introducing to you Prof. H. A. Huston, who will address you on this subject.

ORCHARD FERTILIZERS.

BY H. A. HUSTON, STATE CHEMIST OF INDIANA, PURDUE UNIVERSITY.

It is only recently that much attention has been given to the use of fertilizers in orchards. When the country was first settled fruit trees were planted in the virgin soil and abundant crops of fine fruit are said to have been produced. This result may have given rise to the common opinion that fruit trees, like forest trees, require very little attention and that they can obtain a full supply of plant food from the soil. The bad condition of many of the fruit trees in the State and the small amount of fruit produced per tree leads us to believe that this opinion is not well founded The growth of a forest and that of an orchard are very different. In the case of forest growth no crop of any kind is removed, and the foliage and fruit are returned to the soil and decay on its surface, forming a layer of vegetable mould rich in plant food and humus which is such a valuable ingredient of virgin soils. So far as active soil fertility is concerned the growth of a forest must be regarded as a process of soil improvement.

On the other hand, the growth of an orchard is a process of reducing soil fertility, for crops of fruit are removed and even the fallen leaves do not always remain on the ground around the trees. Ripe leaves may produce some organic matter in the soil, but they contain relatively little fertilizing material; for while the leaves evaporate much plant food, most of the plant food itself passes to the fruit and new wood before the leaves ripen.

The growth of an orchard also differs from that of our common farm crops in that the orchard growth is divided into two distinct periods, the period up to the beginning of fruit bearing and the fruit bearing period. During the preliminary period we have to provide only for the growth of the tree, but after the tree comes into bearing we must provide for both the growth of the tree and production of fruit. While a crop of fruit is being produced the tree must also store up material in the buds and young wood for the next year's needs. This requires a constant transfer of plant food throughout the whole growing season. In order to meet this requirement the soil must contain available plant food throughout the season. This means that there must not only be certain chemical elements present in an available form, but that there must also be water enough present at all times to permit these elements to pass from the soil to the trees.

Proper drainage, deep plowing, subsoiling, mulching, and frequent surface cultivation during the summer all aid in storing and retaining the moisture during the season when it is of the most vital importance that both fruit branch and bud should be making a continuous growth. Without a sufficiency of moisture the best fertilization can not produce its desired effect.

Fruit raising is continuous cropping of one kind and it is well known that the continual production of one crop on the same land demands better fertilization than is required when a rotation of crops is used. The production of a rotation of crops in a young orchard is not a rotation so far as the young trees are concerned, but is too often only a means of removing plant food that is sorely needed by the trees.

The chemical elements that make up trees and fruit are the same that enter into other crops, but the relative amounts of these elements are different. There is a common opinion that the element nitrogen contributes most to the growth of leaf while potash gives color to the fruit. The safer basis on which to proceed is to remember that a suitable supply of all the elements of the plant are necessary for the proper development of tree and fruit. Certain conditions may indicate a lack of one or more elements. A tree with light colored foliage may mean a lack of nitrogen or it may mean a general lack of plant food. Lack of color in fruit may indicate a lack of potash or it may mean a lack of general vigor due to general starvation. The failure of vigorous young trees to produce fruit is often due to a lack of available phosphoric acid. Late ripening of fruit is often due to the same cause. In the presence of enough of the other plant foods, lime tends to promote a stocky growth of the tree and ripening of the wood.

Where orchards are set out on land that has been under cultivation for a considerable time it may happen that the land may have enough available plant food of all kinds to provide for the growth of the young trees and the crops that are often planted in the young orchard, but that shortly after the bearing period begins, when there is an enormous increase in the food requirements of the orchard, one or more elements may not be present in sufficient quantity. Other elements may be present in abundance, but the crop is limited by the deficiency of the one that is most nearly exhausted.

Since the effect of the fertilizer applied to an orchard is expected to extend over a series of years, slow acting fertilizers may be employed if desired. A formula that has proven profitable in the East is made by mixing—

100 pounds ground bone,
100 pounds acid phosphate, and
100 pounds muriate of potash.

Calculated to the percentage basis, this mixture would give—

Nitrogen	1 per cent.
Potash	17 per cent.
Available phosphoric acid	8 per cent.
Insoluble phosphoric acid	5 per cent.

This mixture is recommended for trees in bearing or just ready to bear. Another formula recommended for use at the time the orchard is set out and when the land is of poor quality is—

Bone	150 pounds
Muriate of potash	100 pounds

Calculated to the percentage basis, this would give—

Nitrogen	1.8 per cent.
Potash	20.0 per cent.
Phosphoric acid	13.0 per cent.

Sulphate of potash may be used in the above mixtures instead of the muriate if desired.

These mixtures are used at the rate of 400 to 1,500 pounds per acre. On medium soil 1,000 pounds per acre is a fair application. The best method of application is to scatter the fertilizer over a considerable area, about twice the diameter of the tree top, about the tree and then plow under. Since the roots grow fastest where the food supply is the best, this method will tend to produce a broad and deep root system, a matter of much importance, especially in seasons of drought. When it is necessary to apply fertilizers on sod under the trees only the most soluble forms of fertilizers should be used. In that case to obtain the immediate effect of the first formula given we would use—

Nitrate of soda	20 pounds
Acid phosphate	250 pounds
Muriate of potash	100 pounds

The most conspicuous thing about the above formulas is the high percentage of potash—more than ten times as much as is found in the average "complete" fertilizer for general farm crops.

A comparison of the plant food removed by fruit and wheat may show the reason for this.

Twenty crops of wheat, 15 bushels per acre, remove 660 pounds nitrogen, 324 pounds potash and 211 pounds phosphoric acid; twenty crops of apples, 15 bushels per tree, 35 trees per acre, remove 1,337 pounds nitrogen, 1,895 pounds potash and 310 pounds phosphoric acid.

The period when the wheat plant uses most of its food is during the months of May and June, when moisture is usually abundant enough to permit the wheat plant to utilize all the available plant food in the soil. In the case of the apple the food is most needed during months when the moisture is least abundant. Under these conditions the best course is to provide an abundance, even an excess, of plant food so that during the time when there is sufficient moisture the plant may get its food to the best advantage. In the case of the first two formulas given there would be no danger of loss of fertilizer ingredients from leaching and what was not used one season would be ready for use the next.

It will be noticed that the above formulas contain very little nitrogen. There are several good reasons for this. The most important are the high cost of commercial nitrogen, the danger of loss from leaching, and the tendency of large quantities of quickly available nitrogen to promote too rapid growth of the vegetative parts of the plant.

The best source of nitrogen for orchards is farmyard manure and clover or other leguminous plants. These furnish nitrogen in a form that will gradually become available, and that is not liable to severe loss from leaching. At the same time they furnish a supply of organic matter to the soil and this organic matter is of high value in maintaining a good soil texture and in increasing the water-holding capacity of the land. Care should be taken not to carry manuring to excess or to continue clovering too long since we would then be likely to promote the excessive growth of wood and foliage. I have no doubt that the amount per acre of fertilizer recommended above will at first sight appear excessive, especially in those sections where fertilizer is used only on the wheat crop and where the expenditure for fertilizer seldom exceeds $1.50 per acre. It should, however, be kept in mind that one fertilization of an orchard provides plant food for several years. Moreover, if it is found that the profits of an orchard are increased by the increase in the use of a fertilizer, then the amount used can not be considered excessive until the most profitable amount has been exceeded.

Good fertilization and good management will do much to secure a crop from the orchard every year. This means a supply of fruit to sell in off years when prices are the highest and profits the largest.

The question is sometimes asked whether fertilizers have any influence on the diseases of plants. While there is no very conclusive evidence on the direct effect of fertilizers in combating plant diseases there is no question that a properly nourished plant is in better condition to ward off the attacks of plant diseases than is a plant that is partially starved.

Formerly it was difficult to obtain the raw material needed to compound such fertilizers as are mentioned above. Now the State provides by law for a registration and efficient inspection of all fertilizer materials used in the State, and under this law all the materials have been registered and can be purchased in the markets of Indiana. Purchasers should refuse to receive any fertilizing material unless it bears the tag of the State Chemist showing the guarantee, for this label fixes the legal guarantee of the grade of the goods, and unless it is attached to every package the person, seller or buyer, in whose possession the goods are is liable to rather heavy fine. Rational feeding will do as much for plants as for animals, and a few comparatively inexpensive experiments will convince any careful farmer that he can convert an unsightly and unprofitable orchard into the most paying part of his property.

DISCUSSION.

President Hobbs: As we have another subject to come before us this session, we shall give only a few minutes to the consideration of this topic, and I trust you will be very brief in your discussion of this subject.

Mr. Rockhill: I would like to inquire if this could not be purchased in the proper amounts and mixed by the farmers themselves, and thus save some expense.

Professor Huston: Of course it can be done by the farmers themselves. I see no reason why you can not mix, as well as anybody else, if you take the pains to do so, this material we have been talking about today. If you buy anything like this from a fertilizer house, they take what they call "stock stuff" and put so much potash into it. They will tell you about the marvelous and wonderful means they have of mixing it, and make you think you can not mix it yourself; that the mixing could not be done at home, by the way these people talk, when, as a matter of fact, common stock is made up and in most cases the potash is added from time to time as the orders come into the house. If you know what you want and take the pains to buy it from reliable people, there is no reason why you can not do it yourself and save anywhere from two to eight dollars a ton in the operation.

Mr. Rockhill: I have been trying to use fertilizers on different crops, and haven't succeeded in getting any benefit from any I have used until this year. I had an experience of sowing fifteen acres of clover in corn stubbles. I used on five acres a mixture, a fertilizer, of five per cent. I went yesterday, after this hot, dry weather, to look over the field. On the next five acres I put nothing; on the third five acres I hauled manure, ten loads to the acre. Yesterday I found that the clover where I used the fertilizer has a fine stand, there is a vigorous growth of young clover; where I did not put anything on, the clover is practically burned out; where I put the ten loads of manure, I find the clover is not quite as good as where I used the fertilizer. About two per cent. is the highest you can buy in this market, of fertilizer. I wanted to use this fertilizer and I could not get it here, so I went to St. Joe for some. It did not have the State Chemist's tag on it, so, I suppose, I violated the law.

Mr. H. E. Haines: What kind of a fertilizer will barnyard manure, fresh made from stock, and unbleached ashes make?

Professor Huston: You would be short the phosphate. Your trees would be more liable than others to be attacked with fungous diseases. With that mixture I would add some acid phosphate. The mixture you speak of has potash and nitrogen enough, but not enough phosphate.

Mr. Grossman: What time would you apply this to a three-year-old orchard?

Professor Huston: Whenever it is convenient to plow the land—whenever it is convenient to plow it under. It then fixes it in the soil and it stays there and the tree gets it.

Mr. Grossman: Is it important to plow it under?

Professor Huston: It is. If you do not, you go to feeding the grass and weeds, and it will also tend to bring the roots too near the top of the ground, and it is desirable to get it under as deeply as you can. If you don't want to do that, you ought to subsitute bone meal, acid phosphate or material that will be more soluble. The bone meal can be sowed on top of the ground, and if you decide not to plow the ground it would be the best thing to do, because it will go down in the ground despite itself.

Mr. Grossman: Is it difficult to get pure potash from the importers? Can the buyer get it directly from the importers?

Professor Huston: The only people you can get it of are dealers. The importers can not sell it to you.

Member: There are importers in New York—importers of potash.

Professor Huston: But they sell it to the mixers, and they in turn sell it to us.

Member: One has a right to buy from importers in New York, and use it, hasn't he?

Professor Huston: No, you have not; not if the prosecuting attorney of the county catches you at it, or with it.

Member: Isn't it possible to buy material in carload lots, of guaranteed analysis?

Professor Huston: Yes; but it must be the State's analysis, not the manufacturer's analysis. The manufacturer's analysis may vary from the State's analysis two hundred per cent. of the total value of the goods. If the State says it is guaranteed to be one per cent., it has got to be one per cent.; if the State says it is three per cent., it has got to be three per cent. If the guaranty reads from one to three per cent., which is the manufacturer's form of guaranty, it means it is only one per cent. The State says it must be made definite, and the drug must be what the guaranty says it is. When you get it with the Government's guaranty on, you know what you are getting.

Member: I would like to ask Professor Huston a question. I have three hundred bushels of ashes. My orchard has been sowed to oats. I want to know if it is safe or wise for me to apply the ashes now, or if it would be better to wait until spring, before I apply it to the orchard?

Professor Huston: What kind of ground have you?

Member: Gravel and loam.

Professor Huston: I think I would put the ashes on in the fall, to get the best results, if your orchard does not bear very well; when you have the effect of the ashes, if you will apply the soluble phosphate later, you will get the effect of that.

President Hobbs: This is a very interesting subject, but we must pass to the next for want of time to discuss it further. The next topic is a very interesting one, to be treated by a gentleman very capable of presenting it to us—the Hon. Charles W. Garfield, of Grand Rapids. Michigan. His subject is, "Forestry—Its Relation to Fruit Growing." I have the pleasure of introducing to you Hon. Charles W. Garfield.

Mr. Garfield spoke as follows:

When I came over here today from Vicksburg, I sat behind a couple of ladies, and the window was up. It was rather warm in the car, and the cinders came in in immense quantities, and most of them landed in my lap, and my ears and eyes and all around, and after a time a gust of wind came and took some of the cinders in the lady's face. She immediately shut the window. I said, "Thank you," and she was mad. (Laughter.) It illustrates that sometimes you can not assume to discuss a question with people that they ought to have discussed, that they are unwilling you should discuss. That has been oftentimes the case with the forestry question.

Some years ago, when I was engaged in making programs for farmers' institutes, I placed on one program a topic entitled "Mules." The man who was chosen for the topic seemed to think it was put on the program simply to sandwich in something to give a little life to the program, and he treated it jocularly, and made those who listened to him laugh. You know you might make a lot of fun of mules, if you wished to, for the purpose of entertaining people; but I had something else in view besides to sandwich in a jocular address. I had a man follow him, in a discussion, who knew something about mules, and who gave some sharp, keen advice in connection with the raising of mules. The object was, that while the audience, as a whole, thought Garfield was a queer fellow to put "Mules" on the program, that even though one man failed on good ground, somebody would learn something. The other day I met a man on the street, and he said, "Garfield, do you remember the mule discussion we had about twelve years ago, in Michigan?" I said, "Yes." He said, "That was the making of me. I immediately went north and began raising mules, and it has been a most profitable business; I have been raising mules ever since then, and I shall continue to raise mules, and that discussion was the cause of it."

So, in discussing the forestry question, people generally don't think it is an important question; that it has been put on the program to fill in, perhaps to entertain for awhile; that it has just been sandwiched in, simply because people have not felt the necessity of discussing along the forestry line. After all, I usually keep availing myself of every opportunity I can to say a word along forestry lines. I began it fifteen years ago, and as long as there is moisture enough in my mouth to allow me, I shall continue talking, because I believe that it is today one of the most important problems that confronts the agriculturist of the Middle West. People do not take to a new thing until in some way they are pinched to it, and we are now getting to where we feel the pinch in connection with the loss of our forests.

I did not want to take too much of your time in one discussion, so I sat down to a stenographer and dictated what I have to say, that I might tell you more in fewer words, and that I might not omit some things which I would desire to say, and I will take just seventeen minutes' time to read this paper, and the rest of the time will be given to the discussion, which I consider the most important part of the topic. I believe we get more from the discussion than anything else, and I hope that when I am through reading, many of you will take part in the discussion, and that we may make it as profitable as possible in the time given us for the discussion.

[Mr. Garfield was too busy to furnish a copy of his paper, and this is an abstract taken from a newspaper.]

There is much more in the subject than might at first be thought, for the forest and orchard to an extent seem incompatible. He gave this instance in illustration of his argument: "Two or three years ago I visited the magnificent fruit farm of Roland Morrill, at Benton Harbor, and I found he had saved several acres of timber right in the midst of his peach orchards, and I asked him how he could afford to do this on land that was so especially adapted to the growth of the peach, and he replied that he could not afford to do otherwise; that as this growth added to the value of all the rest of the land for peach growing he could not afford to destroy it, and he deplored the fact that people generally were cutting all of their timber and thus rendering the general conditions less suitable to the growth of the peach."

He said that "another incidental value that is not often spoken of is that which comes from the growth of nut-bearing trees. Few people are willing to admit the great income that can be produced from ground devoted to the growth of nuts that are adapted to our climate and condition. In the growing of this commercial commodity one is carrying out the spirit of restoration of timber areas, and at the same time getting incidental value that is not in the least imaginary, but as certain as any other crop we produce."

DISCUSSION.

President Hobbs: We are very glad, indeed, to see this hearty approval of this paper just read by Mr. Garfield. It indicates that there is a growing sentiment along the lines just laid down by Mr. Garfield. I consider this a very interesting and a very profitable paper, and hope that you will spend a few moments in discussing it.

Mr. McMillan: I would like to ask Mr. Garfield what was his object in planting a grove of mulberries; did he plant it for the birds in the first place, or for what?

Mr. Garfield: I did not know enough then to plant them for the birds· I was not far-sighted enough. I planted them because about ten years ago the Kansas argicultural papers talked so much about the Russian mulberry as an important tree. You see some fellow had Russian mulberries to sell and he was using the papers to sell them; he was using that as an advertisement, and that is why I put them out.

Mr. Rockhill: Our draining the marshes does not affect our timber, or do you claim it is destroying the timber?

Mr. Garfield: I don't know positively. Of course, draining the country into the rivers and getting the water out of it in that way possibly does not leave enough water back in some places. You know in horticulture about ninety-nine per cent. of our products are water, so it is a pretty important thing to hold it as long as we can and get it into the fruit; so that anything that gets the water quickly away from it is hurtful to fruit growing.

Mr. Frame: I would like to ask this question: It is not so much in producing rainfall as that it affords so much greater evaporation. Evaporation upon the open fields is forty-four per cent., while evaporation from forests is twelve. And with the timber cut out the water evaporates so quickly, and then in addition to that, if the water is all drained off and run into the rivers, that is where the great detriment is done.

Mr. Graham: One man on the floor today told us to drain our land for trees, and the other told us to leave the water in the soil to get it into fruit. What kind of a conclusion are we to form from that?

Professor Huston: I guess that is all right. The fact is, it is not so much upon the amount of water as the distribution of the water you want. If you were to adopt the suggestion I threw out and irrigate, you would simply pile up some water already fallen and put it on the land again. I think there is no question about the fact that it is desirable to have satisfactory drainage, because everyone who knows anything about raising plants of any sort knows they will not grow very well with the roots in the water. We must get the general water level low enough so that there is satisfactory drainage of the soil where the trees are to grow, and then irrigate, if necessary. If we had thirty-three inches of rainfall in this country, and it was evenly distributed throughout the year, we would not have to irrigate any. The great trouble is that we have it for five or six or eight or nine weeks and then we don't have any more at all, and that was the time I was talking about—when we have so much rain. I don't think what has been said has been inconsistent with getting stagnant water out of the ground.

Mr. Witmer: I wish to ask Mr. Garfield whether, from experience, it is better to set a grove of miscellaneous trees than to have the trees of one kind?

Mr. Garfield: I can simply relate my own experience. I planted this grove ten years ago, and I didn't know very much about forestry matters at that time—practically nothing except what I had read. A man reads a good deal sometimes, and thinks he knows a lot, and then finds that he is very much mistaken. I got a lot of young trees, and I had just got the land ready and was going to plant them when I had to leave home, and I had to leave the whole thing to my man; so I said to him, "You plant this kind here in this block, and that in that block, and another in that block." I had mulberry, box elder, white ash, catalpas, beeches, black ash, white maple, Norway maple, basswood and birches. The result was this: I lost all of my beeches. I didn't know the beech ought to be covered up I ought to have observed that beeches always grow best where shaded, or where it is dark. So the little block I had planted in beeches originally hasn't any beeches on it. I afterward, when the beeches failed, took that block and planted on it some of most everything I had. That acre today is the most satisfactory one I have. If I were going to plant again I would give some thought to the method with regard to what trees need protection, and mix the varieties.

Mr. Witmer: That is something like a case we have in our own county, where a man had forty acres or more planted in a grove of walnut trees. The trees were doing nicely until two years ago, one hard winter; in places in that grove they lost all their walnut trees. Up to this time they had kept that orchard in a good state of cultivation and the trees were growing rapidly. I believe it would have been better had they set out a variety of trees, and then had the walnut died they would yet have some other trees—trees that could resist the cold much better than the walnut. Not having done that, there are empty spaces which very much mar the appearance of the orchard.

Mr. McMillan: There is one thing I desire to mention, that has been worrying me for a good many years, and that is the way our timber has been used up in lumber, destroyed and wasted, and the way it is at present being cut and sawed up. Forty or fifty years ago we had a good many mills down in our section, cutting nothing but poplar and black walnut; after they got that cut, the mills disappeared, and we thought the timber would be left. In a few years they came back and cut the white oak, and that is now all gone. Now we have, I think, four mills cutting up everything in the shape of poles or anything else three inches and over, it doesn't make much difference what kind of timber it is. In view of this, we will soon have all of our timber utterly destroyed. I hope Mr. Garfield will consult some of these farmers right here who are cutting their timber; I suspect some of them are cutting and hauling to the mills right now, getting what little money they can for it. I hope he will hit them and hit them hard, if he has not already done so.

Member: Timber growing depends largely upon the kind of soil upon which the timber is planted. I have had some experience in regard to the growth of timber, and certain kinds of timber will do well, where certain other kinds will not. For instance, the walnut, poplar, sugar and basswood grow largely on some kinds of soil. Would it not be well, when we are going to plant trees, to learn first the kind of trees that will grow in the soil which we have in which to plant them?

Mr. Garfield: Unquestionably so.

Thereupon the Society adjourned until 7:30 p. m.

EVENING SESSION.

Thursday, August 22, 7:30 P. M.

President Hobbs: The first topic is "Relations of Forestry to the Industries," by Prof. W. H. Freeman, Secretary of the State Forestry Commission. Mr. Freeman will now speak.

Professor Freeman: Mr. Chairman, Ladies and Gentlemen—If there is anything I like it is to see people comfortable. It is very warm tonight, and if it is more comfortable for you to remove your coats, do so. I assure you that is the way I have spent the greater part of my life, with my coat off. If there is anything I am proud of, it is the fact that I have always been a farmer, and am yet. If I could say anything to the young people and to the fathers and mothers that are present here this evening, I would say this, that the best experience that a young man can have is going out and getting a real first-class farm experience.

Before beginning with the paper which I have prepared, I wish to make a few preliminary remarks. In assuming the duties of Secretary of the State Board of Forestry, I feel that I have assumed an educational responsibility which is equal to any other educational possibility that the State could well give to any one man. The subject of forestry in Indiana is an educational one, and I shall try to present it in that way. That I might say in the shortest amount of time the few remarks I have to make tonight, I have written it out and will read it to you. While the many statements in this paper may seem to be dry and uninteresting to you, let me say to follow them closely and carefully, because in these figures I shall attempt to give you the relation of forestry to the industries.

THE RELATION OF FORESTRY TO THE INDUSTRIES.

BY PROF. W. H. FREEMAN, INDIANAPOLIS.

The common view and estimate of forestry is not the best one. It is considered by many as a fad and an origination of office to satisfy the longing of some aspirant who is a fanatic on trees. Such is not the case. Forestry is a matter of the very deepest vital importance. The lack of rigid legal enactments and their prompt enforcement has caused a loss in an absolutely needless manner of some of the natural resources of the State which have been the means of the best prosperous conditions in the institutions of every kind.

I need take but a fact to illustrate the above statement. Ten years ago, when natural gas was found to be abundant in regions of Indiana now known as the "Gas Belt," I dare say not a person gave any thought to the necessity of conserving that great blessing. As a citizen of that community, I know of the thousands of flambeaux that lighted every door and barnyard, pigstye and roadway till travel was as convenient by night time as by day. I do not need to enumerate the manner in which natural gas was consumed just because it could be, without regard to any loss in the future. Because natural gas was abundant and the most convenient fuel as well as the best, Indiana now is a great manufacturing State through which it is greater in its every other kinds of industry. The natural gas has done a great work, but you know the gas conditions now and the strenuous legal efforts to conserve the fragment, and the still greater skirmishing efforts to get fuel into these districts to retain the manufacturing concerns in their present localities.

This presentation of the gas question has no connection with the topic of forestry and industries, except the excellent example it affords of the neglect and wanton waste of the natural resources and the results which follow. It is the most fitting illustration that you and I have seen from the beginning to its almost completeness. The timber problem is one of vast greater significance to industrial welfare. Timber has been and will continue to be one of the most used materials of general use. Wood possesses properties which can not be substituted, and its perpetuity is an absolute necessity.

To state briefly the meaning and purposes of forestry will make clearer the relation it bears to the industries. Forestry does not mean the hoarding and prevention of the use of timber, as many with whom I have talked seem to think, but it means the right conservative use and propagation of timber. The duties of the department as set forth in the law are to collect, digest and classify information respecting forests and timber-lands and to give information and direction for forest and timber cultivation, to establish State forest reserves and to be a bureau of information on timber and timber conditions of the State to associations and meetings of lumbermen, timber dealers, woodworkers, farmers and engineers of maintenance of way of railroads. These duties connect it directly with the industrial institutions. The purposes of the department of forestry and the plans of action as they are directed for attempted execution by the board may be stated in the following sentences:

1. To act as a bureau in the best sense for information on timber and timber conditions, forest and timberland promotion and cultivation for Indiana.

2. To incite the fostering and perpetuation of the present timber areas in the State by inducing a better saving use of the forest product and the continuation of timber tracts in forest as against clearing them off and putting them into agriculture when a forest crop has been harvested.

3. To stimulate the planting of the different forms of waste lands to timber of the most valuable kinds suited to their soil and moisture conditions.

4. To stimulate the planting, cultivation, and retention of good agricultural lands in the best merchantable species of trees to the extent of a reasonable ratio between the agricultural and timber areas, as shown to be for the best good of the general welfare.

5. To encourage shelter and ornamental tree planting around premises, orchards, along the highways and on public grounds.

6. To establish State forest reserves where intelligent forestry may be executed and the results given out for the benefit of the people of Indiana.

These plans rightly carried out will be of much importance to industrial Indiana in agriculture, manufacture, building, construction, labor and trade. The agricultural interests are being affected by the great deforestation that is now under such strong headway. I do not want to be understood as claiming that all the agricultural disasters are due to the lack of forests, but I do want to be understood as saying that the large clearing away of the forests is responsible for some of it.

I am satisfied that our changed climate is largely due to the denudation of forests. The almost certain drouth of summer and the spasmodic extremes of freezing in winter, the more destructive winds and hail storms are all results influenced by the absence of a proper forest area. You as farmers know the results of the drouth, freezing and storms to your pasture, fruit growing and grain crops, and their hinging relations to stock raising.

The argument is that forests are sources of moisture to the atmosphere, conservators of the rainfall against rapid evaporation and a means of storage for fallen moisture by reason of the forest litter and roots to direct it into the earth and hold it.

Every law of climatic equilibrium is made contingent on right afforestation. I do not care to enumerate them here, because I feel you know them and can make the applications. But I wish the following statements to be considered in the relation of forests to agriculture:

1. Evaporation in open fields is 44 per cent., as against 12 per cent. in forests.
2. Water falling on open fields soon flows over the surface to streams and does not remain to do much good to the soil.
3. The rainfall in forests is directed into the soil and retained by means of the roots, litter and humus to be given off gradually to the atmosphere, streams, springs and soil.
4. About 75 per cent. of the annual precipitation is due to transpiration and evaporation from forests.
5. The temperature of forests is much more even and moderate than that of open regions.
6. The spasmodic disturbances of climate are most frequent and destructive in disafforested regions.
7. That year by year sees more and more the drying up of the streams.

There is no industry so dependent on right climatic, soil and moisture arrangement as general agriculture. Fruit growing is most disastrously affected by the drouth and freezes. Orchards need protection from the freezes, extreme evaporation and storms by the planting of good shelter groves. The removal of forests from near fruit orchards has given sway to the insects and worms on both trees and fruit in the absence of birds to devour these pests.

The relations of forestry and agriculture are very vital in farm utility of fences, fuel, building and protection of premises. The subject of fences is one that is now perplexing farmers, and farm philosophers and economists are devoting much time in experimenting for a good solution of the problem. Iron and cement posts are expensive and unsatisfactory. Cedar posts are good but expensive. Systematic fencing is rapidly forcing farmers to a large expense, and consuming the income of the farm. What is to be done? To my mind the solution is easy, first-class and inexpensive.

Every farmer should grow his own fencing material, especially posts. There is not a farmer but that can spare a small patch of ground and cultivate it in either the hardy catalpa, black locust, Kentucky coffee-tree, Osage orange or Russian mulberry, or all of them. Or if he has a woods lot he can grow them in it along with the timber. These species are the most lasting timbers in contact with the soil and the quickest growers. Posts and ties can be grown from them in from eight to fifteen years in quantities of from two thousand to five thousand per acre. You can see the value of it. There are instances in the State where farmers saw this twelve or fifteen years ago and are now fencing their farms from home grown posts. I know of one party who has fenced a one hundred and sixty acre farm from an acre of waste land planted in black locust, and has an abundance of posts yet on hand.

The matter of fuel material is not of such vital concern so long as the coal regions seem to be so vast and productive, together with the cheapness of it. But if farmers desire to produce their fuel they can do so in a short time and with profit. A number of trees which grow very thriftily are adapted to every soil in Indiana. Protection groves may be made to serve as sources of fuel and posts combined.

The growing of timber for construction and building purposes is a much more serious thing. Trees to become large enough for lumber for such uses must have a long time in which to grow. But poplar, ash, walnut, elm, lin, and all the oaks except the white oak are good rapid growers and under cultivation will reach good mature sizes in from twenty to thirty years. Instances of trees from eighteen to twenty-four inches in diameter and sixty to eighty feet in height are known to have grown in the above period of time. White pine is a most excellent tree to plant for these purposes. The white oak, while slow, is yet better than credited, and for its high value in construction and manufacture is a good paying tree to grow. The same with hickory.

The next most important industry in relation to forestry is manufacture. This is more distant in relation to agriculture, but in its remote relations to general trade, labor and timber demand makes it the most vital institution to be considered, and in it is to be found the greatest necessity for a vigorous forestry movement.

In the State are to be found near five hundred exclusive wood consuming manufactories. These consume daily many thousand cubic feet of wood from the large tree to the small undergrowth. These wood institutions employ about fifteen thousand seven hundred persons daily, and pay in aggregate wages near four million seven hundred thousand dollars annually. The capital invested in these factories is near twenty-five million dollars, and they are paying for the raw timber product of manufacture about twelve million five hundred thousand dollars annually. The aggregate finished product in value reaches about twenty-two million dollars annually. A safe and entirely reasonable estimate will allow the assertion that the industries using wood as the principal raw product of manufacture gives the State an annual money circulation of about forty-five million dollars.

These figures give an idea of the magnitude of timber to the industries in the State. The continual destruction of forests with no decided attempt at reforestation will soon find us without timber. Calculations carefully made by the United States Bureau show that at the present rate of timber consumption the timber in the United States can not last more than sixty years if no attempt is made to conserve and afforest. The annual consumption of wood is three hundred and fifty cubic feet per capita.

Eighty years has witnessed the removal of eighteen million one hundred thousand acres of the timber from the surface of Indiana. Most of it had to be removed for agriculture and at a time when there was no demand for it, but a vast quantity was wantonly destroyed and is being needlessly wasted now. The actual amount of timber area in Indiana today can not be estimated at more than one and a half million acres to supply the demand of timber to a greatly augmented manufacturing industry. It is a plain, open question. Can we have the industries without the material to supply them? The problem may not concern us in our time, but is the world going to cease when we leave it? We owe to future generations a duty for having lived before them.

Every law of labor and trade is of the deepest concern in considering this proposition of forestry. A scarcity of timber means higher prices for raw material. This means higher prices for the finished product or labor must be reduced. Either will be to the detriment of the farmer. When things so arrange themselves that the industry can not be sustained, the industry must cease and will cease. Any state or condition of things that will disturb the present prosperous triple relation of agriculture, manufacture and commerce should not be allowed encroachment.

I do not care to prolong the argument. It seems clear to me that forestry is a more serious question than is generally given credence. I appeal to you as citizens to co-operate with the members and board of forestry in matters of timber promotion.

There are many ways in which this may be done, but I call attention to the three following plans as most beneficial and necessary:

1. Insist on the sensible systematic harvesting of the forest crop so as to secure the young timber and the retention of the tract in forest for successive harvests. I am satisfied forest areas systematically harvested and continued will pay better year for year at less labor than if put into agriculture. It will operate as a savings bank.

2. Plant the waste tracts of land in trees of the best economic and commercial values. Waste lands planted in railroad tie and post trees will be found to be a paying industry. The growing of aspens and cottonwoods for paper pulp manufacture, which is now one of the coming large industries in the State and which is paying good sums per cubic cord for such material in bolt form delivered at their mills.

3. Discourage all tendencies which have in them elements of extravagance, waste and destruction of timber. Encourage intelligent legislation to induce tendencies of forest planting and conservation.

President Hobbs: I am very glad, indeed, to have this excellent paper by Professor Freeman. We promised Mr. Garfield an opportunity to discuss a subject presented by Professor Latta.

Professor Latta: "What Nature Herself Will Do Toward Restoring Forests if She Has a Chance."

Mr. Garfield: I don't want to intrude a moment on the time Mrs. Meredith should be given, so I will take two or three minutes only. I believe if nature is given an opportunity she will clothe the earth with forests; she will do wonders if only half an opportunity is given. The reason I believe this is, because in the State of Michigan we have immense areas of cut-over lands that are worthless. They are not worth anything as an investment, now. If you inventory them at one cent an acre, you overdo it; but they will grow timber if given a chance. If the State of Michigan will simply prevent fires and will keep out the thieves, God will cover that country with a beautiful growth of timber in time. Poor lands take longer; good lands give quicker returns; but I believe that those poor jack pine plains that are today an abomination of desolation, because the fires have swept over them time and again, can be made, in fifty years, to have a real value to the State, and the State need do nothing except to keep the fires out, and when the trees get big enough to be stolen, to keep the thieves out. That is what we are agitating in the State of Michigan.

In traversing that country, that poor country, where the fires have been kept out and there is an occasional tree that has been left, we find not poor jack pine simply, but we find white pine, Norway pine, oak, and other valuable timbers coming up on those poor barrens; and this relates to that poor, worthless land of the State of Michigan. I am satisfied. I feel safe in saying, that the next crop, on all that cut-over land, will bring to the State of Michigan in fifty years more than the crop that was first taken off, if it is perfectly safe in its protection, the increased value of timber being taken into consideration.

There are some very strange circumstances in connection with the fact that this new crop of timber comes up where the old had been cut off, up in the northern country; for instance, just as likely as not it will grow up thickly with oaks, where pines were before growing. How can that be explained? Is it that the crows have picked these acorns and transported them to those parts? Hardly. You can get a crow to take one once in a while a mile, but they don't come down here and pick and carry away enough to seed the hundreds and thousands of acres that are coming up with little oak trees, with no seed growing in the vicinity. That seems to me like a miracle; nevertheless it is true. I have this way of explaining the matter. Those oaks are there. They came up together, but the pines got the start and the oaks got left; but they remained there, and just as soon as the pines were taken away, were cut off, they simply came to the front. We know of little oaks in pine woods, we could actually count with the microscope hundreds of them that have just stayed there. The government don't know that they are there. Only competency will find them. I have on my farm a little forest of six acres. I planted one single row of black ash seedlings right next to a row of Austrian pines. They are now about fifteen inches tall. The ash are about twelve inches. The ash will soon be crowded out; the pine will continue to grow. I could not understand the oak business until I had actually seen the black ash experiment. These little trees are there, and they are living, and I presume they will continue to live one hundred years, probably; and if my children's children's children should cut off those Austrain pines and give the black ash a fair show, they might have black ash there as the successor to the Austrain pines. Nature is a wonderful recuperator on the earth's surface; the trouble is, man fights against her so strongly that she does not have a fair chance. They have some fine fruit, or would have it, but they will kill the birds that kill the bugs that eat it up. Nature is all right; man is at fault. Man fights nature, that is where the trouble lies; and it is man, after all, that has to come around on God's side, and that is what we are after.

President Hobbs: If there is nothing further, we will take up the next subject, "Education for the Home Maker," by Mrs. Virginia C. Meredith, professor of home economics at the University of Minnesota. Mrs. Meredith needs no introduction to an Indiana audience further than this.

Mrs. Meredith: I am very much inclined to go on with Mr. Freeman's speech. There is quite a good deal more that might be said on that subject. There is a saying that where the trees go, men decay. And I believe if we were asked of all the nations—we will just say Europe—which nation is going backward, where man is least progressive, we would probably say on the plains of Italy where the forests have been cut away.

I just want to say that I know a man, a member of a firm engaged in supplying railroad ties. He said to me less than a month ago, "Our business is growing; we cut over one hundred thousand acres every year for our railroad tie business." Think of that! Isn't it dreadful? Isn't it awful? One hundred thousand acres, and just one firm! Of course, we have to have railroad ties. But that is not the subject assigned to me. I am going to talk to you this evening about the "Education of the Home Maker."

What is the home, and why should the ones who organize the home be educated? Is there such a thing as a special education for the one who makes the home? What is a home? It is one of the most expensive institutions that we have anywhere. We have been hearing figures about all sorts of institutions and people complaining of taxes paid for the support of the government, local, municipal, and State, and all that sort of thing; but there is nothing, no institution so expensive as the home. Of all the dollars earned in the United States today, directly earned, I suppose ninety-nine cents of every dollar goes to the support of the homes. That is the end and aim of all the money earned, to support the home, the most expensive institution we have. What is the home? I say it is a place and an opportunity for the right development of the physical and spiritual natures. That is a broad and conclusive definition. If all men are engaged in an effort to support homes, we ought to demand a great deal of the home. We must demand a great deal of it to justify this extraordinary expense. Now, it would be far easier if we were to live in communities, if we were to live in companies of fifty, one hundred or one thousand, as they do in asylums; that is a cheap way to take care of them —to have but one cook, one person to buy the clothing, one person to buy the furniture, one church, one school. That is the cheap way. As we do not live that way we will have to give our reasons for it. What is there about the home, then, that justifies this immense expenditure of money for its support? There is just one thing, and that is the protection of child life. There is nothing else that can be an excuse sufficient to justify it, on economic grounds.

There are four propositions I wish to make in this connection. The first is the definition that I have already given you of the home. Home is a place and an opportunity for the right development of the physical and spiritual natures. It is the place in which we have fresh water and food, the right kind of clothing and such things as develop in the right way the physical life. In addition to that, it is an opportunity for the spiritual nature to be developed, all of those fine things, those traits that make man what he is. That opportunity for the spiritual development must be a part of the home.

The second is that the organization of the home is primarily and perpetually a personal and independent enterprise. The nature of the home is such that it can never be organized by a syndicate. We have seen syndicates and co-operations in modern life for benevolent purposes, but they can never organize and manage a home. It is a personal enterprise.

The third proposition is, that home making and housekeeping can scarcely be separated, and that taken together they form a business as important and in purpose more definite than any other business known to modern times. This home, then, if organized as a business, has certain well defined lines and principles that underlie its successful organization.

The fourth proposition is this: that the one who undertakes to organize a home and maintain it, ought to have a special training for this very special personal business; a training as definite as that secured by the physician, as definite as that secured by the railway superintendent as he passes from brakeman through all the positions to railway superintendent.

In undertaking to secure this special education, we are at once met with several difficulties. One is the fact that there are women who dislike housekeeping and home making. It used to be considered a treason to say that; it used to be thought that because she was a woman, she had every quality to make her a splendid housekeeper and mother. That is not true, I am grieved to say. That is one difficulty.

The greatest difficulty we have to contend with is, as I believe, that for which I must use the very strong word, ignorance. Women don't know how to keep house and make homes successful. There are many failures, and it is sometimes because of something they can't find out. Women get discouraged, and they think it is not at all worth while to undertake a special education. A few years ago I was at a great pottery in France, and saw in there a young Frenchman who was sitting at a bench working a treadle with his foot. He had taken a small bit of that beautiful white clay and fashioned it for our entertainment. He did it so easily and so successfully and so skillfully that I felt I could do the very same thing. That bit of plastic clay he would draw out into a beautiful high, graceful vase, and then make a globular shape in perfect taste; presently he made a cup, beautiful, thin, delicate as an egg shell, and yet he handled it with perfect ease. He handed it to a girl of our party, and she, without thinking, reached out her gloved hand, and she had scarcely touched that cup until it fell in fragments at our feet. The man looked at her in a knowing way, as if to say: "You have not skill enough to hold the beautiful thing I have created." Now that girl could have been taught to hold that cup; she could have been taught to hold it just as easily as the man who fashioned it. So it is with this beautiful, delicate thing we call home, made up of housekeeping and home making.

We see so many shattered homes, so many homes that have been undertaken in youthful enthusiasm, where the girl had not been trained for it, and the home was shattered; but that girl could have been taught, could have been trained; her mind could have been trained.

Of course, there have been most beautiful homes in the past, most magnificent, in which fine men and fine women have been nurtured, and those homes have been organized and managed by those who have had no special training. Such homes are and have been made; but the women in those homes correspond with those men who, without any advantage in youth, have earned their own way, sent themselves to school, and by their own efforts, energy, ability, genius, have reached congress—circumstances under which we call them "self-made men." Some of the finest men we have ever had in the United States have been what we call self-made men—men without education when they started, unable to read and write, perhaps; but who would venture to start his boy today, without giving him some opportunity to learn to read and write. The opportunities offered are so much wider to the one who has some culture, some training. So almost every home might be successfully organized and maintained if the one who makes the home has some special training.

I think of this kind of training in connection with agricultural training, education. You know it has not been very long ago since people smiled when the agricultural college was referred to. There were those who thought we needed no special education for agriculture. It is a proposition that can not be denied, that if agriculture is a business that calls for a first-class brain, this brain must be trained and educated, drawn out and developed; if agriculture is a business that can be done by third, fourth or fifth grade of men, then education, perhaps, is not necessary. So, if housekeeping and home making can be successfully done by third, fourth or fifth-class women, of course it is not worthy of a woman with a first-class brain. But we think today that agriculture is worthy of the effort of a first-class brain, and we think that no other career can be as fine as that of home making and housekeeping, for a young woman.

One of the greatest problems that confronts us today is the cost of living. When we speak of money spent in our homes, it covers four lines. We spend money for existence, for comfort, for culture and for philanthropy, and the per cent. for each will depend wholly upon our training, and not wholly upon the size of our income. If we have an income of five hundred dollars, and a family of five, about eighty-five per cent. of that income would be spent for existence. If we have a five thousand dollar income, then the per cent. spent for existence would be cut down to about twenty per cent., perhaps less. Now, is there any plan, can anybody think out a plan by which we shall get every last bit of value for our dollar? Has anybody a plan for a five hundred or one thousand dollar income that will bring to the family the right proportionate part to spend for existence, culture, comfort and philanthropy? If so, where is it? That great question is unsolved today; and no question can be more important. Men spend their lives, they risk everything to earn money, and the only use for the money is the family use.

When we think of all the aids and opportunities men are offered for teaching them how to earn money, which is so necessary, when we think of the technical schools for men, engineering, mining, scientific, business colleges, apprenticeships, and everything to help the men to earn the dollar, and then think of the benighted, stricken preparation of the woman who spends that dollar, it is appalling. The value of the dollar that man earns is determined by the intelligence of the woman who spends it. There is a rational and just relation between income and expenditure, and it is right to think of the dollar in this way, to think of investing it with all the sentiment possible.

A dollar will buy beautiful opportunities, opportunities for culture, opportunities for philanthropy, for helping others. Can we find an education that will help toward the use of money, toward the organization, support and maintenance of the home?

This new education is the realization of the old theory of education. We have had to undo an unjust appreciation of the mind. We are emerging from that time when everybody was engaged in a feeling toward the material things talked of so much in life. There was a reaction from that. Now we are having a reaction from academic training; we are going to have, or have had in many places, manual training schools, with academic training.

The first schools, as you know, were to train ministers. They were the only ones for whom it was thought education was necessary; after a while people saw differently, that others needed education. We had the college, then the high school. We seem to have been going down from the top to the bottom all these years, instead of beginning at the bottom and going up, or forward.

When we give an occasional thought to the education of the hand, it seems to me that ought to be combined with an academic training. I think I might illustrate that in a very homely way by referring to the study of physiology. I believe every child that goes through our ordinary schools has some knowledge of, some instructions in physiology. One of the facts, items or bits of knowledge that comes to that child is that the skin is an organ of excretion. He then immediately knows that much about physiology. That is good so far as it goes. But suppose when the child was taught that fact of physiology, there was a teacher who taught that fact in its relation to the home and housekeeping, what would be the result of that one bit of information? What effect would it have upon the mind of the child? What would it determine for us? It would first determine the necessity of a bath. A child getting that kind of information gets the reason why. So he goes further into the facts and he finds that the skin is more active at night than in day time, and that means no man should wear during the night the clothing worn during the day; it means that the room he sleeps in ought to be ventilated better than where he lives during the day time. He spends one-third of his life sleeping. He inquires further, What is sleep? Who knows what sleep is? Those who thought it was physical exercise have begun to think it is spiritual exercise. They used to teach that we had to sleep only for the physical body, in order that the physical body might repair the waste of the day, that we might recuperate. If that were true, then the lazy man would not need any sleep, when the fact is that the lazy man sleeps longer than other men. There are many reasons. If you don't sleep, what is the result? Does your body waste away, does it become more tired? No; it is the mind. So sleep is not physical exercise altogether; it is physical exercise, but more. The child has been led to this, and then what comes? If sleep is a spiritual exercise, if the soul is refreshed, ought we not approach sleep in the right way? Not only in the matter of wearing proper clothing, but ought not the mind come in the right attitude? Ought we not get in a pleasant frame of mind and remain in the right way? That bears on family life; that means good temper when you get up in the morning. And in this day, just in this fact of physiology, can you not see that if all of this knowledge a child gets at school were properly connected, shown in its right relation to housekeeping and home making and home life, members of the family, kindness, temper, and all these things, can you not see how much better satisfied we would be with life?

Now, this education embraces several things that are easily taught. One thing, that almost seems to be more important than anything else, is the subject of cookery. I suppose everybody here can cook. Men are the best cooks, because they never cook. But isn't it astonishing how many poor cooks there are, how much poor cooking there is, and how much wasting there is of good material, because the one who is doing the cooking has not mastered the effect of heat upon particular articles that are being cooked. So very much that ought to be palatable, and would be nutritious, is absolutely wasted. If we could be taught simply cookery, wouldn't housekeeping and home making be very much more agreeable to us than it is? I am sure that it would be. The same is true of sewing. It is amazing how much good material is wasted because one does not know how to choose the material, in the first place. Just think, for instance, of differentiation along the line of animal and vegetable fiber. Well, you say, animal is more healthful than vegetable fiber; that will soon take the place of linen as an article of fabric. So we find along the line poor judges of material, who buy shoddy materials because they don't know how to judge them, and they make them up unbecomingly because they don't know how to make them. There is so much in making garments in a becoming style. We all know if we get a little child a dress that is becoming, and make it in a way the child likes, that child will wear that dress and wear it and wear it; but get a dress that is ugly, that it doesn't like, that does not suit, and pretty soon that dress is past wearing. So all along the line. Here comes the benefit of getting this kind of a special education. This is given in many schools, today, very many special schools; but only in a very few cases has practical manual training been given in the academy. Why has it not? Because it is expensive, very expensive. So it is not given.

I have a favorite theory, and I cling to it as everyone does to a favorite theory. I believe the right place to give one who is going to keep house a special training is in the agricultural house. I believe in having an equipment that could be utilized along the line of cookery in connection with the vegetable gardens of the horticultural department and equipments already in horticultural colleges. It might be very well utilized by giving girls instructions along this line.

In the school of agriculture in Minnesota, Dr. ———— has a very beautiful little museum made up largely of native birds of Minnesota. Unless you would see it, you would not understand the variety in colors the native birds would illustrate. He uses these birds in his class room in his own particular department, but also this museum of birds is used by the teacher of sewing in training girls along the proper combination of colors. There is nothing finer in the way of combination of colors than the plumage of birds.

Now, along other lines, in plant life, the girl can pursue as well as the boy. The girl can study that and receive as much benefit from it as the boy. It is a fine study in itself.

I am one of those who believe that the finest and best home is made on the farm. I believe that people go away from the farm because the women are not satisfied. I believe the women are not satisfied because they don't understand the business of farming. If they could take an agricultural education along with the boy, their eyes would be opened a great deal. When we come to study live stock, I think we come to have more patience with everything about us. In the school of agriculture in Minnesota, the girls have the same instructions as the boys in the elementary classes of forestry. The one point is that they may be sympathetic. When talking about forestry, its effect upon the climate, and industries, and in a sociological way, these women are more sympathetic toward the movement than are the men. In Minnesota congress set aside an immense tract of forest land, two hundred thousand acres, as a national park, and it was the women who originated the movement that resulted in the action. We find that in cities, the women are already taking steps toward originating these.

I think that education at the agricultural colleges should be extended to the girls as well as to the boys, along the lines of plant life and animal life, and when the boys get their manual training in their special work, let the women take cookery, laundry, etc.

I thought there was a very good exercise in home economy in a certain class talk not long ago. They had the lectures in the line of expenditures, and the examination consisted of an expense account of one family for one year in a certain named income. To show you how the class was progressing, I will tell you about one girl. She started with a family of five, and she was going to spend one thousand dollars on that family of five. She thought it was a lot of money when she started, but when she got about five months along she found the money was not going to hold out throughout the year, so she concluded that one boy should get drowned and they could not find his body, so there would be no funeral expenses to pay. However, they do not all do that way.

I suppose that the bread in South Bend today is baked by the men. I suppose it is; it is in other places. Why should they not do it? The laundries are run by men, the sewing of men's coats and trousers is done by men, and why should it not be? All of these things we used to think belonged to women, and being really women's work. Many kinds of work has been taken away from the women. To me, it does not make any difference at all whether he makes the bread or the coat, or whether she makes it. The thing we are concerned in is that the bread shall be good and the coat well made. If the woman can do it better, let her do it; if the man can do it better, let him do it. Above and beyond sex is ability in certain lines of development of the individual, and that is what we are getting at.

Aside from every other business which women do, or which they fail to do, there is certainly on the part of women an aptitude for home making, which I don't think is to be taken away from them.

So we see two kinds of economics, masculine economics, which uses men toward the end of creating great wealth, and feminine economics, which uses wealth toward the end of creating great men. Man earns the dollar; woman spends the dollar judiciously, wisely, and gives opportunity to her family.

I believe it is possible to educate women specifically and definitely for home making and housekeeping, and I believe it should be given, and ought to be given in our schools of agriculture. It is a movement toward elevating the home, and preparing for it as a career is a reaction, I think, from the disposition which women have had to leave home and go into commercial life. They have been driven into commercial life, but it is their province to make a home. This is half of her education. College women have been thinking along these lines; schools are being organized, and home making and housekeeping is being held up as a definite business which must be prepared for, if they would be conducted very successfully.

I suppose all of you were at the Columbian Exposition. Some of you may have read those inscriptions that were written by President Eliot from Harvard. The inscription was over a fine monument, and the inscription was almost greater than the monument, which was among those at the peristyle looking out toward Lake Michigan: "To the brave women who meet strange dangers—reared families and made homes." Wasn't that a fine recognition of women? With those pioneer women, in those new homes, the home was never made without heavy toil, and they met strange dangers. Dedication of life, knowledge, intelligence, everything, is worthily dedicated when it is dedicated to the home.

I think of home, often, as of the making of a violin. Those who have read Kate ——————'s story will remember how she says the wood is taken from a tree on the sunniest side, just so near the heart of the tree. It is then put in a stream of running water, and there hears the rippling of the water, the singing of the birds and the sweet sounds of nature, and then the bit of wood is taken from the water and put away twenty years, fifty years, one hundred years, and then some one comes and takes that bit of wood and fashions it into a violin, and when it is made, this perfect instrument, it takes another to get from it the sound that sends your own heart to all those beautiful memories, those beautiful thoughts, beautiful treasures of inheritance we have from our mothers that used that first violin, but our own hand must bring the chord, and our hand and heart both must be trained.

President Hobbs: I am very sorry that this house was not filled to hear this splendid address.

Professor Latta: It seems to me it would be a nice thing to give the ladies present an opportunity to express themselves in regard to this kind of education. Indiana women do not know very much about it yet; at least, so far as I know, they are not seeking it to a very large extent.

Mr. Garfield: Several years ago, perhaps ten, Mrs. Mayo, who is the best woman worker in the grange in our State, appeared before the Board of Agriculture and made an appeal for the farm girls, asking that the Board of Agriculture recognize the responsibility as great in connection with the girls of the farm as the boys of the farm, and promised that if the board would make public recognition of that fact that she would do her best in connection with our large rural organization to furnish the raw material. The Board of Agriculture, after discussing it up and down, to and fro, got the farmers interested in taking testimony in other States where co-education along rural lines had been established, decided upon the establishment of a women's course. Mrs. Mayo and her associates did their part well. At the outset there was a goodly number of girls started in at the college to take the woman's course. After two years the State Legislature recognized the importance of this department in the agricultural department to this extent that it appropriated for the finest building on the campus, so that in Michigan the education of the girls at the agricultural college is perfectly co-ordinate with the education of the boys, and those things best adapted to the needs of the girls in growing to be home makers will be won in time. It is not perfect now, but we hope by-and-by to incorporate some of the very delightful things in it which Mrs. Meredith suggested as generic. I was so glad to have her start out with the principle that it was the expenditure of money that was particularly woman's work in the world, the expenditure of money in connection with the building of home. Now it seems to me that that must be kept to the front in connection with the agricultural college. It is not simply the acquirement of scientific education, of knowledge simply of things, but knowledge of how to accomplish certain things with this factor, money, in hand.

We are making mistakes over in Michigan. Mistakes are always made in connection with new things of that kind, because it is an untrodden field, but we are gaining a great deal on it, and we have great hopes for the future.

We copied from Indiana years ago, when we put in a mechanical course in an agricultural college in Michigan, and it has been a success; and while I would not ask Indiana to copy from us, yet you can do as we did, make a venture in that line.

Professor Webster: I really do not know what is to be done in the agricultural college in that direction; I can not tell you and I do not know why Professor Latta asked me to tell you. I have no personal knowledge of the exact course that they are pursuing, but I hope that they are taking precisely the same course that Mrs. Meredith has suggested.

Professor Newton: While I agree with the advancement that is being made in the agricultural colleges, yet I would like to have it broaden out a little. Mrs. Meredith is simply giving the girls a hope of a chance, that is, we who are able to send to college. I believe this matter ought to be taught in the public schools, in the rural schools, to a certain degree. That is one thing that is being neglected. The rural schools are not what they should be, and I believe we should have help in that line, although the matter, as it is being worked up in the colleges, is a great thing; but those who are not able to go to college are left somewhat in the dark.

Mr. Fess: Some years ago, not very long ago, my wife became acquainted with a couple of young ladies in Grand Rapids who had some special training along the line that Mrs. Meredith has indicated from Philadelphia. She invited them to come out to our place and give us a talk on cooking. They consented to come out, and there was a gathering of ladies of the neighborhood to listen to them, and they talked along the line of the preparing of certain special dishes, and on bread-making. Of course, we thought that everybody knew everything about bread-making that was necessary, and it was generally supposed that you ought to keep bread standing about as long as you could to make it good. They said this was a mistake, that you ought to get the bread out of the way as quickly as possible, to take plenty of yeast and hurry up your bread-making. Well, this was only one thing; they learned that afternoon a great many things; and not long ago I heard one of those ladies say that she was certain that the little education they got from those trained cooks was worth more than a thousand dollars to the women of that neighborhood. This is the way it worked up an interest in them; they didn't stop at just what they learned that afternoon, but it set the ball a-rolling toward advancing things in many ways, and I have been surprised to see the advance made. To me it is a lamentable thing today that so many young ladies commence housekeeping that haven't any more education along that line than a last year's bird's nest.

Mrs. Robertson: I have this to say, that if our girls are to be home-makers, this is just the sort of an education they ought to have, just the kind of an education we ought to give them, and I can think of no other or better place than in the agricultural colleges. I have given the subject no previous thought, whatever, before coming here, and so have nothing more to say at this time.

Lady Member: We certainly want that kind of an education for the girls. I have no girls, but I am interested in that kind of an education for girls, because I have four sons who will want wives after a while. (Laughter and applause.)

Professor Latta: It would please me to have more of the women say, "I want my daughter to have that kind of training." We have got to have the second specimen in Indiana, for that kind of training.

The first expression has come to us within a few days in the person of a young lady from another county who proposes to enter the agricultural course at Purdue this coming September. We would like to have several others to enter that course this fall. Do you know of anything better for a young lady than what Mrs. Meredith has suggested this evening? Isn't it a good thing for the country to have young ladies trained in that respect? Do you know what is being done in the State of Washington, in the State of Michigan, in the State of Ohio, in the State of Illinois, in the State of Kansas, in the State of Iowa, in South Dakota and away up as far away as Washington, and in other places, in the line of such education in connection with agricultural colleges? Do you know that your own State is away behind, is away at the rear of the procession in that respect? Some ladies would say, what is the matter with your Purdue? The facilities are equal there. Purdue has been struggling along pitifully during years gone by. There has been a demand for expenditure of two dollars for every dollar of money, when we have only one dollar to expend; consequently when the boys, the farmer boys who have come there demanding this and the other, giving emphasis to that demand by their presence, we have been compelled to do this and that and the other in the line that they desired done; we have done the best we could for them, and said, "If you will come, we will see that your wants are supplied, as best we can." I believe with all my heart and soul in this kind of education, and I heartily thank Mrs. Meredith for those words. It must come sometime in the future; when, I don't know, but I do believe that we shall solve in a large measure the problem of education for the boy and girl of the farm who expect to spend their lives on the farm. If the girl is trained so that the home is an ideal place for him, the home will be happy and both will be contented. If the girl is looking elsewhere, the boy will look elsewhere, too. People will tell you there are not many who can get this kind of an education at college; but do you know that there are thousands of young women in Indiana at college taking other kinds of training, training not in this line at all, because this kind of training is not being given. Do you believe the women of Indiana ought to have it in Indiana as well as in Michigan? They have over one hundred in Michigan, and have only been at work about three years. What does that mean? What will be the future of our farm homes if our daughters are looking elsewhere and our sons are looking elsewhere? What are our future homes in Indiana? It is a question I feel too strongly upon to speak as I would like to in this spontaneous way. Don't go home with the impression that we are fishing for some inkling of a demand in this line. We propose to take this one girl, even though there are no others who come there for that purpose, and do what we can for her, in the hope that she may inspire other girls to come and do likewise. It is a good thing.

Professor Goff: There are some things we are getting a little jealous of; this matter of woman's education, we are getting a little jealous of. I will say we have not settled on this question. We have had a few young women at our agricultural college. Last winter our Legislature passed a bill authorizing the founding in counties of schools of agriculture and schools of domestic economy. That will meet the point, the question this gentleman spoke of, that there are so many who can not attend the agricultural college; but there will be a good many in each county who will be able to attend these schools of domestic economy.

Member: Regarding the subject of forestry, there is a law in this State providing for the reservation of lands for forests, which lands are exempt from taxation, as I understand. I would ask someone who knows, if they will, to explain more fully what that law is.

Professor Freeman: There is a law on that subject. There is but one law in this State now, directly upon that subject, which is the reservation act of 1899. The law is simply this: That any land-holder has the right to set aside one-eighth of his entire tract of land as a forest, under three conditions:

First. If it is a natural forest, containing 170 trees to an acre, he can go to the auditor and file a claim, with a description of the land which he desired to reserve. That is subscribed under oath, and this claim must state the number of trees required by the act, and that he intends to maintain the same according to the intent of the enactment; and upon his doing this, this original forest becomes subject to this act upon his filing with the auditor the description as I have stated.

Second. If he wishes to set apart his land, one-eighth, whether it be forest or not, he can plant one-eighth of his farm in trees, 170 to an acre, and cultivate them for three years, and then it will become subject to the act, as I before stated.

Third. If it contains one hundred trees or more, he can plant enough to make up the required 170, and cultivate it for three years, and then it becomes subject to the act, as in the other cases. But in either case, he can not pasture this land until there are 170 trees above four inches in diameter. That is, under this law, all that the farmer has to do, if he has the forest on his farm, or plants the trees as I have described, is to go to the auditor and file an expression of his willingness to set aside or reserve as a permanent forest, not to exceed one-eighth of his land, and specifically and definitely describe the land, and this is made under oath. Then the land is assessed at one dollar an acre, which practically means that it is exempt from taxation.

Member: There has been some trouble about that law, has there not, in some of the counties? I have heard something about the trouble. Can you explain that matter to us, what that trouble was about?

Professor Freeman: There was some trouble in Jay county that resulted in nearly bringing the matter into the Supreme Court; but that resulted from the fact that when the law came out a great many persons who had the power of notary public got in their buggies and drove all over the county and solicited farmers to make these exemptions. Out of forty-three every one was wrong, and that is why the auditor would not file them. As soon as they were made out correctly the auditor filed them. You can file the claim at any time throughout the year, and the auditor will keep the record of this, and the assessor in the spring will examine the various forests and report favorably or unfavorably. If favorably, the auditor will make the reduction; if not, he will refuse to make the reduction. If the man has 160 acres, he can set aside 20 acres.

The meeting here adjourned until 9:00 a. m., Friday, August 23.

MORNING SESSION.

Friday, August 23, 9:00 A. M.

President Hobbs: We will open the exercises this morning by music.

Piano solo by Mrs. Ort.

President Hobbs: We will now be led in prayer by Rev. E. P. Bennett.

Prayer by Mr. Bennett.

President Hobbs: We will now have a solo by Mr. Matthews.

Vocal solo by Mr. Matthews.

President Hobbs: The first topic for discussion this morning is "Our Native Plum," by Prof. E. S. Goff, Horticulturist at the Wisconsin Experiment Station. I regard Mr. Goff as the foremost authority at this time as to the native plum; I think he has had more experience, he has done more with them, and knows more about them, probably, than any other person in the country.

Professor Goff: Mr. President, Ladies and Gentlemen—Before beginning my lecture, I wish you to all understand what is meant by the native plums. It may be known to some of us, and many of us, that there are several different species of the cultivated plums. We all know that there are different varieties. We are all, perhaps, familiar with the Lombard plum, the Green Gage plum, etc.; but some of us may not know that there are several other distinct families of plums. There is the blue plum that you so often see in the market, large blue plums, and the old green gage plums we all knew in our childhood, belong to the class that we know as the European plums. That means they were brought to this country from Europe by our ancestors. These are more extensively grown than any others in this country. They are successfully grown through the middle section of the country from north to south; they are fairly successful as far north as the Great Lakes. Then we have another class of plums that have been recently introduced from Japan, the large Burbank, etc. They are quite different in their properties from the European plum. We don't generally consider them as delicate in quality. They are about equal to the European plums in hardiness, probably not quite so hardy.

We have, in addition to this, the wild goose plum of this country, found here, native plums, and are here to a lesser or greater extent in the wild parts of the country. These plums were not until a recent date considered sufficiently valuable for cultivation. There are also two distinct types of the native plums. The wild goose plum is of a familiar type. The wild goose plum is of the same family that we notice in the central and southern portions of our country. In the northern part of the country, I have still another species. I wish to have you distinctly understand the difference between the wild goose class of plums (I speak of it as a class, although there is distinguished two or three different species of those) and what we call the American or northern plum. It is of these species that I shall speak largely today.

THE CULTURE OF NATIVE PLUMS.

BY E. S. GOFF.

[Abstract.]

In a climate as far north as this, the European and Japanese plums are not reliable for fruiting. It is true that after a mild winter, the trees may fruit well, but in a winter when the temperature descends much below twenty degrees below zero, the flower buds of these species are usually destroyed.

In Wisconsin, we have been obliged to abandon to a great extent the European and Japanese plums for market. We have, therefore, turned our attention to the native plums, and I am pleased to say that we have found one species of native plum that is proving very satisfactory. The flower-buds are not susceptible to cold and the trees are long-lived and productive. This is the species that is designated by botanists as Prunus Americana, of which we now have something more than a hundred named varieties.

[The speaker here showed samples in bottles of some of the finest varieties of this species of plums.]

As you will observe, the fruits compare favorably in size with those of the European plum. This species is native all through the northern States, and far northward into Manitoba. It has been reported that the summer after the severe freeze of February, 1899, trees of this species of plum that had been exposed to a temperature of fifty degrees below zero bore a fair crop of fruit. At our Experiment Station we have not failed to secure a crop of this species of plum since 1894—the first year in which we had many trees of it old enough to bear.

It should not, however, be understood that this plum can be grown without careful treatment. The curculio is nearly as injurious in this species as in the European or Japanese plums. We use the jarring process. It is important, also, to cultivate and fertilize the land well. Mulching may be used as a substitute for cultivation where the trees are closely planted. It is also important to thin the fruit in many varieties. Varieties should be freely mixed in planting, as it is now well established that the flowers are not fertile to their own pollen.

The Americana plums are chiefly used for culinary purposes, but they sell well. We have not yet grown enough of them to test the capacity of our local markets. The past two seasons we have received as much for our plums as good Michigan peaches sold for in our market. The quantity of these plums that may be sold is large. Many families order a bushel, and we have sold as much as six bushels to one party for hotel use. The native plums are rapidly becoming staple fruits in the markets of the northwest.

Member: I would like to know if you succeeded in growing a great many plums that were worthless? If you did so, what did you do with them? Did you use the stalks for grafting, or did you destroy them entirely?

Professor Goff: We did, of course. We are extensively engaged in growing seedlings from the best of those native plums. Of course, if the seedlings were not fit to use for any purpose we need them for, we throw them away. Sometimes we top-graft them, but we generally throw them away.

Mr. Kingsbury: I did not understand you to say what the proper distance was to plant them apart?

Professor Goff: We have recently planted an experimental orchard for commercial purposes; but we are growing them as an experiment. We planted them twelve feet apart, with the expectation of taking them out, one-half of them, after beginning to crowd. After thinking the matter over carefully, we thought that was the wise thing to do, because I do not want to crop the ground between the plum trees; but having planted them twenty-four feet apart it will be several years before they occupy that ground. We concluded, judging from the experience of the experimenting orchards, that the intermediate rows of plums, up to the time that the trees began to crowd, would pay for the expense of the whole cultivation of the plantation up to that time. For full-grown trees, I would recommend twenty-four feet apart; but if any of you like to take out the plum tree after it has got to bearing size, then I would recommend the planting of them twelve feet apart both ways with the idea of taking out the intermediate rows, after they begin to crowd.

Professor Latta: Will you please tell us whether you would recommend under any circumstances, the close planting and mulching of them, instead of regular cultivation? Would that give good results?

Professor Goff: I should say in regard to close planting, that those trees are now interlocking so much that it is difficult to get through the orchard, unless you stoop down and go under the limbs. We had a considerable number of European and Japanese plums in the orchard, and the cold winters have taken them out, so we can get through there better; but if they had been all American, it would have been very difficult to get through the orchard at any place.

Professor Latta: Would cultivation in the regular method be preferable to mulching and planting close?

Professor Goff: I think so; but we find we get better results from mulching than cultivation. It is more expensive than cultivation, but it is better than cultivation alone.

Member: What would you recommend for a crop for the first few years, in a plum orchard?

Professor Goff: I would not recommend anything. I would prefer very much, indeed, to give my ground up to the trees, exclusively.

Member: How about chickens?

Professor Goff: Chickens are all right; for a plum orchard, there is nothing better than chickens.

Professor Webster: Is it better to have the ground bare or to have it covered?

Professor Goff: The better plan is to keep the ground bare during the early part of the season, and then sow a cover crop later. The object of a cover crop in plums is to keep the ground from washing.

Professor Webster: What do you use for a cover crop?

Professor Goff: We use oats. We don't use rye, because it sprouts too much in the spring.

Professor Webster: Which do you regard the best?

Professor Goff: Oats is the best all around. We tried vetch, but the principal difficulty is that the seed cost about six dollars a bushel, and it makes it pretty expensive.

Member: In your planting, do you give any attention to pollination in planting?

Professor Goff: We endeavor, so far as may be, to plant together those that bloom at the same time. It has been well established among native plums that they do not fertilize themselves; so in planting we mix them instead of putting them in blocks.

Mr. Johnson: Have you been troubled with black knot?

Professor Goff: We have not been troubled with black knot at all.

Member: How about rot?

Professor Goff: We are troubled some with rot. The rot troubles the European and Japanese plums rather more than the American plums. The only remedy for that is to thin them so they do not touch each other, so no two touch each other, and they are not so bad.

Mr. McMillan: When does the American plum begin to bear?

Professor Goff: They begin to bear at three years from setting, very often.

Professor Troop: I don't know that I can answer that question, but I will say that Mr. Carr of Maryland has grown this class of plums successfully in Maryland. He published a statement that the American plums were more profitable to him than the European or the Japanese, because he could get them on the market earlier.

Mrs. Davis: I have been a raiser of plums since 1890, and I have seventeen varieties, mostly European kinds; I have two native varieties, and I have five or six Japanese varieties, and I have not found that the European kinds winter-kill at all; but they sometimes fail to bear a good crop because I don't thin them enough. I live in the northern part of Laporte County, and I had a good crop every year I thinned. I spray instead of jarring. I used to jar, and found it took up too much time; I did not get my breakfast early enough, and I had to do it myself. I spray every winter with soap suds and kerosene for insects. I also spray with Bordeaux mixture after the blossoms fall, three or four times. I came today to learn something about native plums. I have only two varieties. I have grown a few European and native varieties but I have not made a success of it. I have one native variety, the gold plum, and I can not make it bear. I have five trees I set out in 1897. They have blossomed for two or three crops, blossomed full. I tried to get a specimen of this plum to bring with me, but I could not even get a specimen. I would like to ask the gentleman if I would set some other varieties near them, if that would fertilize them and make them bear?

Professor Goff: I think the gold plum should perhaps be set between other trees. We have a few young trees, quite young trees, but they have not had any plums on until this spring. We have but a few of those, but they are growing by the side of or among other varieties.

Mrs. Davis: We cultivate our plums, and they are set sixteen or eighteen feet apart, and we find that it is too close; we have to be trimming them a good deal. Would not mulching harbor insects?

Professor Goff: I do not think that it is any more apt to harbor insects than loose soil.

Mrs. Davis: We have put in our new orchard a few plums and we set these twenty feet each way, and I do not think they will be any too far apart. I do not like the close setting. I would ask if you spray with a prepared mixture for curculio?

Professor Goff: We do.

Mrs. Davis: You do not use Paris green?

Professor Goff: We use Paris green for the last spraying. Paris green is an effective agent in spraying for curculio. I think Professor ——— of Illinois, in his experiments, decided that he could reduce the number of curculio by spraying with Bordeaux mixture and Paris green.

Mr. Swaim: I do not want to interrupt the professor's suggestions, while on the plum subject, but I want to give my experience in spraying for curculio with Paris green. I used Paris green early, as soon as the buds started. Whether it was due to climatic conditions, a cold spring, or whether due to the spraying, I don't know; but I do know that I have had but little trouble with curculio this spring, as compared with the year before.

Professor Goff: I think the cold spring had more to do with it than anything else.

President Hobbs: The next topic is "Care of the Peach Orchard," by Prof. S. H. Fulton, Superintendent of the Fruit-Testing Sub-Station, South Haven, Michigan.

Professor Fulton spoke as follows:

Mr. President, Ladies and Gentlemen—There is no kind of fruit which responds more readily to good care than does the peach, and there is no kind of fruit for which good care is more absolutely necessary than the peach. Where the peach orchard is not given good care from the first, it becomes more a source of annoyance than a matter of profit. A new orchard should be thoroughly cultivated from the start. Ordinarily the ground can be cropped the first and second years, depending upon the character of the soil. It is customary to crop but once, but on some of the heavier lands, the trees are cropped twice, with such crops as corn, melons, cucumbers, and potatoes, sometimes, but this crop is not so good because the ground has to be disturbed in the fall and sometimes induces some fall growth. Trees should not ordinarily be cropped after the second year. This year we have had plenty of opportunity of knowing the effect of thorough cultivation of all kinds, and more than anything else on the peach orchard. We have had rather a drouth in Michigan, and the dry weather was telling upon the early peaches when I left there nearly a week ago. Some of the growers in the vicinity of South Haven were hauling water and putting it about their peach trees. The early varieties were smaller than usual and somewhat of a bitter flavor, due to the fact of ripening in such dry weather. It was quite noticeable where the ground had been thoroughly cultivated, that the trees were standing the drouth much better than where they did not, and the leaves looked better. Orchards which were neglected as to cultivation, the leaves were turning yellow and falling off, and it was almost certain there would not be more than half a crop of peaches on them.

The number of times they should be cultivated depends upon the season and upon the weather. In the spring we usually plow the orchard. Following this we give it a pretty thorough cultivation, until the latter part of July, and sometimes the middle of August. This season the growers are working the trees a little later than usual, because it has been so dry, to hold the moisture as much as possible. Thorough cultivation is usually best. It does not matter much what tool is used, so long as the ground is kept thoroughly worked. There are perhaps two ideas upon the matter of cultivation. Some believe in keeping out every weed; others believe there is a limit to it. If the weeds appear here and there, they do not think it is a matter of great consequence, so long as they keep it moist on top of the ground. I think this is something a grower will have to decide for himself; but this thing is, of course, true, that if we make the greatest profit, we must produce the crop at the least expense.

The matter of pruning is an important one. The first two years of the life of an orchard, we like to head them pretty well, so that the body will become strong in proportion to the size of the top, and have the main branches of the tree become thickened up. We know the tendency of the peach tree is to make long arms with few branches upon them, and when bearing heavily it is likely to break down. Heavy pruning for the first few years would obviate that to some extent. Most growers prefer to cut out the center branches so as to leave the tree open to admit the light. In the south it does not make so much difference, because there is a good deal of sun there. We always practice spring pruning, shortening in of the growth, and thinning out. The lower branches are sometimes cut off from the peach tree. I think this, in most instances, is a mistake. We have quite a good deal of pruning that growers term "cow-tail pruning;" the lower branches are taken off and you have a tuft of leaves upon the upper extremity of the branches, giving the branches the appearance of the term, and the lower part of the branches will be entirely destitute of foliage. This is a mistake. In a short time the trees will become very tall, and it will become quite an item in picking, and it also brings the fruit out on the ends of the branches and they are quite liable to break down.

Low heading should be practiced, where it can be; it is much easier to handle the fruit, and it is much easier to spray the trees; and they stand against the high winds much better than otherwise.

Yesterday we had the subject of fertilization of the orchard discussed, so I shall not touch upon that to any great extent today. The matter of fertilizing the orchard is a very important one, especially upon the lighter lands. Professor Huston, have you some formulas for mixing ingredients to use upon the orchards? We have not done much in Michigan, as yet, toward using commercial fertilizers, but we will have to in a short time. At the present time we rely mostly upon stable manure and wood ashes and ground bone. The wood ashes, where they are to be gotten, is one of the best fertilizers we can use, but the supply in Michigan is getting very limited. I think we will soon have to come to some form of potash, or ground bone is always good and the effect is lasting.

Member: Will you tell us the formula the Michigan peach growers use for fertilizer? It is made in what quantities?

Professor Fulton: I could not answer that satisfactorily. There are few of our growers who have used commercial fertilizers.

Member: I think Mr. ——— uses wood ashes and phosphates in some form.

Professor Fulton: I am not positive as to the kind of phosphate he uses.

Member: Do you know how often they fertilize, every year or every other year?

Professor Fulton: About every other year, I think; it would depend somewhat upon the crop. Where we use wood ashes and barnyard manure, it depends somewhat upon the crop we get as to how often the trees are fertilized. Where we get a crop every year, we like to fertilize about every other year, and sometimes every year. Ground bone has been used in considerable quantities. We have not used any form of potash, except such as we obtain in wood ashes. Upon our sandy lands, in particular, we find stable manure a good fertilizer, but it is considered objectionable by some, especially to some varieties.

The matter of spraying has been gone over thoroughly, so I will not say very much about that.

The leaf curl, some seasons, is very troublesome; but we find by the application of spraying we are able to control that disease effectually, and sometimes only one spraying is necessary. Sometimes the disease is very bad and takes the entire crop in some sections, but one spraying is ordinarily all that is necessary. For this spraying we use a copper sulphate solution, one pint to twenty gallons of water, and apply it in the spring before the growth begins. Some have tried winter spraying with quite as good results. We have not had any very bad attacks of leaf curl since we have tried spraying. Last year we sprayed some in November, and we found a little more curl on them in the spring than if we had sprayed in the spring.

Late spraying does not do nearly so much good as it does three or four weeks before the buds begin to open, and at that time there is more time for such work than there is later in the season. Bordeaux mixture has been recommended for early spraying, but the copper sulphate solution is not so much trouble.

As to the cover crops in the peach orchard—what was said by the speaker who preceded me, Professor Goff, about the plum orchard, applies very well to the peach orchard. Oats is one of the best cover crops we have. We have used crimson clover a good deal, but it is difficult to get it to catch; it also kills out; but if you get a good stand in the fall that winters over all right, it will make a good growth in the spring and is a good cover crop.

Professor Latta: Have you tried drilling clover in light soil?

Professor Fulton: We have not tried drilling it. Our plan is to broadcast it and work it in with a spike tooth harrow. We have in some instances drilled oats with crimson clover.

Member: Do you think there is anything in getting soil inoculated with the bacteria, where crimson clover has grown?

Professor Fulton: Yes, I think it might help the case considerable to get some soil upon which clover has been grown and use that for inoculating soil upon which you sow it.

Professor Latta: Have you had some good catches?

Professor Fulton: We have had some fine ones.

Professor Latta: You spoke about its drying out and dying; I think the secret of that is too early sowing, in that case.

Professor Fulton: I should think that might be the trouble; sandy lands are inclined to be somewhat dry anyway. The upper two inches of the soil becomes very dry, and there would be a liability that it might dry out, if it is not sown deep enough. Where crimson clover is grown and a good stand obtained, you ought not to wait until it begins to blossom. I know it looks very beautiful, one likes to see it in that condition, and it almost seems too bad not to leave it, but it is fatal to the best results of the orchard that season because it draws upon the moisture which the trees ought to have. I think it pays better to work it under when the plant is small, or as soon as the ground is in good condition to work. Where we sow oats they freeze out during the winter, and there is no trouble from them in the spring, and upon the other hand they answer the purpose all right.

Member: What time would you sow oats?

Professor Fulton: That depends upon the season. Quite a number of growers had sowed their oats when I left a week ago. No doubt, after these rains, they will be busy sowing oats as quick as they can get ready, those who have not already sowed. About the first of August is the usual time.

Professor Latta: What is the average life of the peach orchard, under such care as you have given?

Professor Fulton: With good care and thinning—I think I said nothing about thinning—the length of the life of the tree depends to quite an extent upon thinning of the fruit. Where trees overbear they break down, and all the best growers make a practice of thinning, and where given care such as I have spoken of, they will usually last twelve years, and I know of some orchards sixteen years old which are still fruiting well.

President Hobbs: Last summer I went into Mr. ———'s orchard at Benton Harbor, Michigan, and he pointed out to me trees thirteen years old, and they had borne for a number of years, I don't know how many good crops of fruit; and with his system of tillage and fertilization and thinning he had so preserved the vitality of the trees that they were in perfect health, making a fine growth that season and supporting six or eight bushels of fine peaches to a tree, showing the possibilities of the peach tree when properly fed and cared for.

Mr. McMillan: I wish to ask if we can depend upon securing a good peach by planting seed, or do you depend entirely upon grafting?

Professor Fulton: We depend entirely upon budding. There are two or three I know of indirectly in Michigan, which have given very good results that depend wholly upon seedling trees. Some varieties will produce themselves, or very nearly. Hill's Chili is one of those. There are other varieties which we would be absolutely uncertain as to what we would get. The Smock is another variety that will reproduce itself.

Member: I have been reading something in regard to thinning, and I wish to ask your opinion in regard to it, particularly in regard to one party who thins pretty largely with the shears. He waits until the buds come out in the spring, so he can judge from that about how many peaches the tree would bear, and he, instead of commencing below and doing the cow-tail trimming that has been spoken of, commences above and works down out of the tree, and thins out and leaves what he thinks the tree may be able to support; he cuts out the fruit in that way, instead of allowing them to grow as large as your finger. He aims to trim the tree in the spring before they commence this process. Everyone knows the effect of trimming the grape vine, how the grape vine will send out new wood on which to bear the fruit, but we have not got to the idea that the peach will do the same thing. In this way, in cutting it out at that time, the tree is ready to send out a new growth of wood for the next year, so he had an abundance of new wood in time to produce new peaches, and keeps on in that way; it produces better peaches. So his idea is that he will do his thinning with the shears, largely. Mr. Stephens, of Kalamazoo, says: "How long we live before we know anything." I only learned last year to thin my plums with the shears, carrying out the same idea with the plums that Mr. Morrill does with the peach.

Mr. Henry (Laporte, Ind.): Would he take into consideration that he is in northern Indiana and not in Michigan; that he is in a section of the country where the greatest difficulty is to get the peaches on the tree, not to get them off? That is our trouble. If he will explain to us how to raise peaches in northern Indiana, how to get them on the trees, I will see about getting them thinned enough. Our difficulty here is to get a crop of peaches once in five years. I would like to know something about that.

Member: I can't answer that.

Professor Fulton: You do not have the influence of the lake that we have in the locality of the lake shore country where I come from. That is what makes our peach trees bear. If we did not have the influence of the lake, we would not get crops any oftener than you say you are able to get them here; I doubt if we would get peaches at all, in any quantities, at least. On the east side of the State we are able to grow some peaches, but they are not as reliable as they are on the other side of the State. In sections where the conditions are not favorable, where there is danger of freezing the buds, or freezing the trees, some advance can be made by the selection of the hardiest varieties. As you get farther north, you will have to pay more attention to that than you do in the lower part of the State. We have three or four kinds we can rely on. They fruited two years ago after the freeze, and they have fruited other years when they have had no chance at all. The Lewis Seedling, strictly a Michigan peach, a white peach, but the quality is good, is one.

Member: I live about eight miles north of Mr. Henry; we are nearer the lake than he, and we get good peaches generally four seasons out of five, in hardy varieties.

Member: We have peach growers here that, I think, ordinarily average about one good crop in five years.

Professor Fulton: The Kalamazoo is another hardy variety, and is as largely planted as any variety we have. It is a yellow free-stone peach, and one of our standard varieties, ripening in September. It is not quite so hardy as the Lewis Seedling, but it is a hardy peach of a good quality. Hill's Chili is another very hardy variety, but the Chili requires rather moist soil, or it will grow very small and inferior.

Member: How about the Fitzgerald?

Professor Fulton: The Fitzgerald is one that we have not had much experience with, and I could not say as to that.

Mr. Swaim: Do you know about whether they bore after the freeze of 1899?

Professor Fulton: I do not know as to that. The trees must have been very young at that time; if I remember rightly we had no Fitzgerald. Our trees did not bear following the freeze six or eight years ago. The Gold Drop is one of the very hardiest we have; it ripens later than any of those other kinds we have mentioned.

Member: How about the Crawford?

Professor Fulton: The Crawford is one of the very tenderest we have.

Member: The Alexander?

Professor Fulton: Of the Alexander there are very few planted. They come in the market in competition with southern peaches and they are hard to handle; they are tender and they rot so quickly that they are not being planted any more to any extent.

Member: What can you say as to the New Prolific?

Professor Fulton: The New Prolific is not identical with the Kalamazoo, but is very similar to it.

Member: Have you the Crosby?

Professor Fulton: Yes, they fruit very well, but it is not so hardy. It is a pretty good peach, if it is well thinned, but it has an inclination to grow too small.

Member. How about the Elberta?

Professor Huston: The Elberta does fine. It ripens early in September.

Member: How about the Snead?

Professor Huston: The Snead, we do not like. It comes in earlier than the Alexander. It is small, delicate of texture and hard to handle; it might do well for the local market.

Member: The Greenboro?

Professor Fulton: It comes in with the early ——————, and is about as tender as the early——————.

Member: How about the Champion?

Professor Fulton: It is a large white peach with a red cheek. It has not fruited very well for us. In the lower States it has fruited remarkably well, and where it bears well, with the right kind of handling, it would be first rate. It is a fine peach. With us, however, it has been a rather shy bearer, and it is tender.

President Hobbs: In our locality it is very hardy, and is of a large size.

Mr. Johnson: In regard to the Champion, I want to say that the only objection I have to it is that the trees break down.

Professor Hobbs: That is due to careless thinning.

Member: How about the Cling?

Professor Fulton: As a general thing they are not very much raised. Sometimes we have a call for them, special orders.

Professor Latta: If you can give me from five to seven minutes without infringing on another's time, I would like to say a few words. You know that in my work I shall be going out over the State more this winter than heretofore. As I have gone over the State I have been impressed with this fact—I may be wrong—but that is why I ask the question—that our orchards, especially on the farms, are not considered as a commercial enterprise, and are neglected shamefully. The average farm orchard, to me, is most unsightly. It makes me heartsick to see the old orchards struggling along against what I believe is not only neglect but abuse. There are men here from other counties, and we want them to go out as so many packages of yeast, to leaven them up again.

I want to ask this question: Am I right or wrong? Is it true that we do not pay enough attention to the feeding of the trees of the orchard as well as care in the way of cultivation? Is that the experience of the people here? Those that are in the business commercially, please answer, for I do not want to preach the wrong gospel. I want the verdict here in the way of a vote, or something. Is it as important to feed the orchard as to cultivate it?

Professor Newton: In northern Indiana I know of but a very few orchards that have been cared for properly; I know of some that have been partially cared for, and I think they have paid for that care. There are very few who are interested enough to take care of the orchard as it should be, in this locality. There are very few fruit growers here who are growing all varieties of fruit. So far as I am concerned, I have plums and peaches, and I have neglected, and I knew I was neglecting my apples. My main crop is strawberries, and while gathering and taking care of my strawberries, I have neglected the tree fruit. This year I have a very good crop of peaches, neglected as they were. I deem it possible to grow peaches in this locality, nearly every season, if planted in the right location and properly cared for. I do not believe that the plum is apt to be frozen here. I have raised plums the coldest winters we have had. If the vitality of the tree is kept up, and the insects kept off, I believe it is possible.

Mr. Haines: My experience in that regard and Brother Newton's are entirely different. I have only eight acres altogether, and I have it all set out in fruit, and I have lived in my peach orchard most all summer. I have appples and peaches and plums of all kinds. I commenced cultivation in April, and I have been over my orchard twenty-one times since the first of April; I have kept it thoroughly clean, and the trees have had plenty of moisture all summer. I visited another farm over here. My peach trees are only two years old. I think I have ninety-five trees that are bearing peaches this year. I have averaged about sixty-five cents a tree, and some went as high as $1.50. My friend has a peach orchard two years older than mine. He took the plan of cutting all the lower limbs off the trees, making the top about four feet from the ground; and those trees two years older than mine, several hundred of them, when I was through his orchard I found but a few trees with any peaches on. I would like to ask the gentleman in regard to pruning. I have left the limbs on, the limbs almost tough the ground, and I do not find the peaches in the top of the trees but on the lower limbs, and I would like to ask him the question in regard to pruning and cutting the tops. They are two years old, and I think the tops are too heavy. The question is, how shall they be thinned?

Professor Huston: It is always well to avoid taking off the large branches, but it sometimes becomes necessary.

Mr. Haines: What time of the year?

Professor Fulton: The spring is the best time, before the growth starts in the spring If it becomes necessary to take out the large branches, do so, and open them up as much as is necessary. Of course, if they are very thick, it may be well not to open them very much the first year, and the next year open them some more, cut and shape it. In my young trees, in the spring, I take a big scoop full of ashes, strong ashes, and scatter under the tree, and as soon as I get the ashes scattered, I cultivate them.

Mr. Swaim: In the past two years I have been about over the majority of the counties in northern Indiana, and my observation is that there is a very small per cent. of the orchards that are properly cared for, or anything near it; the great majority of them are sadly neglected, have had no care, or worse still, have been abused by turning stock in and allowing the stock to do the pruning and thinning. I would like to hear what Professor Troop has to say in regard to that.

Professor Troop: I have been over the State somewhat, and my experience has been a good deal along the line that Mr. Swaim speaks of. I might say that Mr. Swaim has reported to me several times in regard to the condition in which he finds orchards in the State, and that every time he, and others have also, mentioned the fact that where the orchards have been cared for, have been properly fed and cultivated and pruned, that they were bearing good crops, not only this year, but for years past.

Here the question was put to vote, and it was unanimously carried that not enough attention is paid to the feeding of the trees, as well as cultivating and pruning them.

President Hobbs: We will now pass to the next topic, which is, "The San Jose Scale and its Treatment," by Prof. F. M. Webster, Entomologist of the Ohio Experiment Station at Wooster, Ohio.

Professor Webster said:

Mr. President, Ladies and Gentlemen:—This is a scaly subject, and possibly that may account for my saying so much regarding its extermination. Now, I want to confine myself strictly to the topic as placed on your program. The treatment and the details of the treatment I wish to go over until afternoon. I will tell you what we are doing and what we have done, but so far as the details of the spraying are concerned, I should like to have that go over until afternoon, when I can give it more time.

In the first place, I would say that no insect, no one insect has ever been accorded such an unwelcome reception on the face of the earth. It is disowned by every country on the face of the earth. Just as soon as we get hold of a fact that points to any particular part of the world as its nativity, immediately that nation or country rises up and disowns it. It is the most difficult one we have ever had to deal with.

Now, in describing this, I hope you will pardon me in conveying to you what this looks like, if I use a rather commonplace illustration. Now, I do not mean to say that there are flies on Indiana; there are no flies on Indiana, I know that; but I trust you will understand what I mean when I say this insect on a tree looks a great deal like a fly speck. Now, you will know just exactly, those who do not already know what it is, what to look for. It is a commonplace expression, as I said before, but it is the best illustration I can give you. If they are overabundant they crowd one another, and they overlay one another. In order that you may know just to the extent that they will do that, I have brought some of them with me. I will ask this gentleman to pass them to you. I don't think you will want to keep them, but you can see just exactly by these specimens, what a tree would look like that was inhabited by those little insects.

In this bottle are three plums, picked from an infested tree, and by this you can see exactly what the appearance of the fruit is from a badly infested tree.

Now, in order to make it a little clearer to you, I have had these illustrations made, exaggerated in size, but true so far as form and color are concerned, as nearly as we can get at it in this way. You will notice upon those twigs, and you will notice upon the trees in the orchard, something that is round like a plate and slightly elevated toward the center, and in the top there is a depression, and at that point there is a nipple-shaped form. It looks like, as my boy explained, a volcano. If you will raise that up with the point of a knife, underneath you will find an object, shaped precisely like that, yellow in color, which is the insect itself. This covering is as much of a protection as is the shell of the turtle to the turtle itself. Now, this is the kind of an insect we are trying to deal with. It is very minute and insignificant in appearance, and that is one of the difficulties; it looks so small, so insignificant, so incapable of doing damage, that people can't understand that it can cause so much trouble, and wonder that there should be so much said about it.

Most insects reproduce by eggs. This one does not. The new are produced by birth. When they first make their appearance they are of this shape and color (indicating on illustration). You will see some of them, if you look closely, and you will see the little tiny yellow ones on the twigs. They look like minute particles of dust, and you must look very closely to see that they move at all. They move about for perhaps forty-eight hours, then they will run about over the parts of the tree, or they may fasten themselves to insects that frequent the trees, and get upon the feet of birds, or they may be brushed off on your horse with which you cultivate your orchards, or they may be brushed off on the clothing of those who examine the trees.

Lest I should forget it, I want to say now that our inspector forces are never allowed to go from one orchard to another, where there is any danger of carrying insects in that way. We never go directly from one orchard that is infected to another one where there is a possibility of its being infected.

After this time, that is, about forty-eight hours, they settle down on a twig or a fruit, and it is of somewhat this appearance (indicating). They lose their legs and attach themselves by these filaments. Then, when they get to the stage where they become fastened to the bark, they lose all the appendages of locomotion whatever, and retain only the tube whereby they suck the sap. They live upon the sap of the tree. Then they have this appearance (indicating) still of a yellow color, but covered with the young scale. This is what you would be looking at, directly down on it; and if you could get a side view, you would see something like this (indicating) elevated, with the little nipple-like appendage in the center. It is yellow at first, and the color later becomes black, and still later takes on a grayish color.

So far I have been talking to you about one sex, the female. The male is somewhat different. At first it comes from birth, going through these changes, and then developing into a fully grown insect which has wings. The female has no wings, it can not move. The male flies about, anywhere at will.

So much for the appearance of the insect itself. I think with what you have before you, what you see here and what I have been able to tell you, you can form something of an idea of what to look for in your orchards, because I want to tell you it is one of the things that will bear watching, and not only one year, but every year. I do not know why it is, and we can not understand it, that some of the most careful fruit growers we have, men who stand well up in their profession, many of those fruit growers have overlooked this, year after year; they do not intend to do it, but they do; and not only one time has it been done, but again and again. The insect sucks the sap from the tree until the tree will simply stop growing and die. By that time you have a tree looking very much as those darker twigs in those tubes; that is as near as I can describe it. If you would cover that with mucilage, and then dust it with ashes, you would then have a very good idea of the appearance of a tree that has died from the scale in an orchard.

Now, as to the way this disease is spread: Of course, you know that in going from one state to another, this has come about largely by way of nursery stock, but it is diffused through the orchard or through a community in several ways. The question comes up very often in regard to infested fruit. You have there a specimen of infested fruit in that little vial. A great deal has been said about the danger from that fruit. We have never been able to trace an introduction back to infested fruit. We tried some experiments last year in this way to see what we could do. I don't want you to take them as conclusive, but I will tell you what we did and the results. Early last October we took very badly infested apples, pears and plums and we placed them directly about the trunks of fruit trees, putting the infested fruit on the ground and heaping them up a little—not exactly heaping them up, but putting them directly about the trees. In other cases we took peelings of apples and pears and twined them around the trunks of trees. We thought what we got out of that ought to mean something, but up to the present time—it is now nearly a year—we have not found a single scale on one of those trees. I do not want to be understood as saying that infestation can not come from infested fruit, but I want to show how difficult it would be for us to do that.

President Hobbs: Why is that so difficult?

There are a great many things I do not know, and that is one of them; but I do know we did not succeed in that case. And I do know this, that it spreads in various ways. We wanted to study this scale in the insectary on trees we had planted there, and we wanted to get just exactly those conditions, and we had a collection of limbs badly infected with the scale brought to us, and we fastened them onto those trees with a wire, and I worked for two years before I could get those scales introduced in that way. I do not know why. We are terribly bungling with some things and other things work very easily. You will understand there was no wind there whatever and they must simply crawl from the limb of the tree to the tree, which they did not want to do. They would fasten down to the drying up bark of the section that had been introduced, before they would crawl off on the tree. We did finally get them introduced in that way.

Now as to the way this is introduced into orchards and the way it is carried over the country: When one of my inspectors (we have ten or fifteen of them) finds a little of this scale on a tree, he knows then, just as well as if he had seen it, that there is an infested orchard somewhere in the neighborhood. The work is dropped right there and he goes hunting for the place it came from. The first thing we do on going to an old orchard is to look under old birds' nests, and I will explain why we do it a little later. If one complaining of this insect in his orchard will tell me what side of the orchard his infested tree is on, I can tell him pretty nearly what the result will be. It makes all the difference in the world on which side of the orchard it is introduced or makes its appearance. If it is on the north side at the outer edge, or on the east side, it will spread comparatively slow. I am now speaking of Indiana, Ohio and Illinois; that is, the section between the Mississippi river and the Alleghany mountains. If he finds it on the south side of the orchard, or the west side of the orchard, then he had better look out; they will be carried by the wind in just precisely the same way that the wind will carry a prairie fire. It is just as true in this case as it is of the fire, and it will carry it over a large orchard in precisely the same shape; if you know the shape it will take, then you know what the condition is in regard to this insect.

The Osage hedge is the worst thing we have to deal with. The birds nest in the hedge and feed in the orchards, and they will carry it on their feet to the orchards, and they will bring it from the orchards to the hedge; they will go about in an infested orchard and bring the insects back on them to their nests, and they will carry them from their nests out in the same way, and in that way it is spread.

We find the winds have very much to do with spreading it. For instance, a peach orchard is planted upon the side of a hill. We have sometimes found that this got started at the foot of the hill in a gully. Now, the current of air that passes up through that gully will carry the scale and we will trace it out that way. If we find at the foot of the hill the surface is practically level, it will spread less rapidly, showing that the winds have much to do with it.

I would say that we have occasionally found trees with one or two limbs badly infested with this scale, and no more trees in the orchard infested. Perhaps upon investigation we would find that one mile or a mile and a half or two miles from it was an infested orchard, and the way we explain that is that a bird has come from the infested orchard and alighted on this limb and carried on its feet those insects. We have a good illustration of that over here near the mouth of the Maumee river. There is a large peach orchard with several infested trees scattered through it, and there is no other way for that to happen than by the birds carrying it, coming across the bay at the mouth of the Maumee river. There is plenty of scale on the other side.

Perhaps I ought to explain to you a little more in detail how it comes we get so much information in regard to this insect. Two years ago the legislature gave us fifteen thousand dollars to use in stamping out the scale where we could find that it was established, and we have had no trouble whatever in finding out where it was established. I have found that a single report on cities like Cincinnati, Cleveland or Toledo means four or five months' work for twelve or fifteen inspectors. But we have had these men working in them for considerably over a year, not quite two years, in going through this territory and inspecting it. It means not only an orchard, but it means square miles. I presume the men have been over territory including not less than one hundred square miles, locating it, marking the trees. A tree, where the expense of treating it is more than the tree is worth, is marked with a white cross. When treatment is recommended it is marked with a straight white mark. Now, when this is done, a plat is made of the orchard, showing just the location of the trees, and there are two copies of that; one is deposited at the office and the other is placed in the hands of the assistant in charge of the treating. After the inspector has finished, the owner is notified of the condition of his premises and ordered to treat it within a certain time. If he does this, well and good; if he does not, or will not, then the assistant in charge of the treatment, with a bundle of those copies, of those maps of cases in that locality, carries out the system of treatment and the owner of the premises is charged up with one-half of the total expense. That is why we have been able to study this over so much and to go over so large an area and learn so many little things about it we did not know before, not so much with reference to the habits of the insect, as the treatment of it.

I would simply say in regard to the treatment that I have sprayed with whale oil soap, using two pounds of soap to each gallon of water. That makes a strong mixture, but we must get something that will penetrate the covering and reach the insect underneath. We have used soap for the reason that in all of our treating, which means hundreds of thousands of trees, in not a single instance have we done any damage. There has not been a single complaint of any damage done. That is one point we have learned. But there is another thing we have learned, and that is we must not use whale oil mixture upon bearing peach trees in mid-winter. If we use this preparation upon the bearing peach orchard before the buds start in the spring, we will kill practically all the fruit in the orchard. If we use it the same strength after the buds begin to swell in the spring, after the time they begin to push out, we will do no damage whatever. I do not know why that is true; but we never treat a bearing tree in a peach orchard in the winter time, but let those go until spring and then go after them in full force. You see that we can very easily do thousands, yes, hundreds of thousands of dollars amount of damage if we did not know that we must not use this mixture in mid-winter.

President Hobbs: Does it affect the Japanese plums and European plums in the same way?

I think it does affect plums a little, but I can not tell to what extent. We have been pretty careful in regard to plums. I think plums, possibly of the more tender varieties, and pears, also, are affected by it.

There is another point in connection with this soap mixture, which I will speak of now, and that is where we have used this in early spring there is never any trouble with peach leaf curl. Even though the amount used is not more than one pound to two or three gallons of water, there is never any trouble with peach leaf curl after we have used the soap mixture.

We have gone into this treatment quite extensively. We have used something like twenty tons of soap since last December. I had an equipment of one steam sprayer, the first one that ever came into the State of Ohio, the first I ever saw, and the first one that was ever used in the State. We have four large tanks, holding 300 gallons of mixture, and with these we use Morley's sprayer and as much as four lines of hose. Every one is adapted to two lines, but with the steam sprayer we can not get into the most difficult places in the city. We have had to treat a section of about three miles square in Cincinnati, among the best residence portions of the city, and it would not do to go on those grounds with a team when the soil is the least bit soft, and we had to contrive some way of treating those premises without getting on the grounds themselves, and some of those grounds are pretty extensive. So we set the steamer either at the driveway or at the curb, and then attached one line of hose. It may run back a hundred or two hundred feet. Ordinarily we have a pressure of one hundred pounds to a square inch. When we get back in those lots sometimes we find there is a jungle that the people going along the street will not see, and we have to have enough hose to use, with the steamer at the curb, going around among those trees and shrubs, treating them and with our facilities we can treat the highest trees we have been called upon to treat.

President Hobbs: How do you treat the very high ones?

We can use our extension rods, and we can reach up over twenty feet. The boys sometimes climb up like squirrels and go up to the top. We have some extension ladders we use in reaching the upper portions of the trees, but if the boys can climb up more readily, they do so. We do not attempt to reach the higher trees from the ground. So much for the treatment of the trees, orchards, premises, parks, cemeteries—we have it all to do.

Now for the treatment of the nursery stock that has to be grown in close proximity with an orchard or orchards that are badly infested: We have some rather queer experiences in attempting to protect the nurserymen from what they are in no way to blame for. Some of them are not wholly without blame, because some of them are very careless. I might, in some cases, change the word careless to some other one, but there are others who are honestly doing the very best they can to keep their premises clear of anything of that sort; but over the fence, across the way, across the road or street, is an orchard that is infested with the scale. The nurseryman can not reach the man, but we can. We can manage the orchard, if the individual can not or will not take care of it; but how about the nurseryman who has been endangered from it? Sometimes in going through a nursery I find occasionally a tree that has been infested from the orchard, we know very well. We could not condemn that man's business and wreck him on any such basis as that; we must have some better reason for it; and I am going to tell you how we manage those things. In every case where we find one or two trees, and where we find no trees at all, where we find the nursery is in too close proximity with an infested orchard to let the trees be set out without some further protection to the people who buy them—suppose we find a tree in a nursery row, or a block of, say 100,000 trees, the tree is located, and then the man will begin to work around and around, gradually working outward, looking carefully for other infested trees. If we find another within ten feet away, then we condemn everything within ten feet of the original tree, and it does not make any difference whether we have found a scale on it or not, it is condemned and burned. Then we keep on going farther out. If we find nothing beyond that, nothing more is condemned, but before that nursery stock can go into the market it must be fumigated under the direction of some one connected with the department and ordered to oversee the inspection. As a further protection, if we can find absolutely nothing, we insist upon that fumigation in a room constructed particularly for the purpose.

Some of you may think the way to do, if you find one tree, is to condemn the nursery and have it all burned. You would not think that way if you were in the business. A business you have spent a lifetime to build up can be wrecked in a short time. I can wreck it inside of a week. But the owner of the nursery has rights, and he has a right to justice. After we have cleared up everything that would be apt to endanger his patrons, then his stock, before it can be sent out, must be treated in this way; and I want to say right here that hydrocyanic acid gas is one of the most deadly poisons known to the chemist—we use cyanide of potassium and sulphuric acid, which you must all know is a very deadly poison, and combining the two and water forms a gas that is practically as deadly as the two ingredients put together.

I can illustrate, perhaps, a little to show you what the effect would be. After this stuff has been kept in this room with this gas for a certain length of time the doors are thrown open and ventilators are thrown down, and everybody is forbidden to go into the room for a certain time, from twenty minutes to half an hour. In one place a colored man thought that half an hour was a little too long. He did not want to wait so long, and he went in to get some trees, and he suddenly fell over. They pulled the fellow out, and after a while he came to, and they asked him what he was doing. He said, well, he didn't know; he got in there and all at once it got dark, and that was all he knew about it. So from that you can understand the deadly nature of the gas.

As to the way we use it, we have been very careful. No man ought to use it unless he has the nature of it thoroughly explained to him, and no one but a careful man ought to have anything to do with it whatever. I find that the men who are very careful with it, but who work with it continually, complain of headaches due to the effect from the fumes. We wanted to avoid that, so we had these houses made with a slatted floor, and with an aperture perhaps that large square (indicating). Then make a miniature windlass. Then put out this sulphuric acid and water on a chair or platform underneath this windlass-like affair. At the top of that attach a pan. Up through here (indicating) there will be a vertical bar. As we push that down an incline plane, this vertical bar strikes a pig or cleat and upsets the pan and throws the cyanide in so that it passes down through the slatted door and the trap door falls behind it, and in that way we save the man from getting any fumes whatever.

We have carried on a very extensive work for a year. This afternoon I will tell you something more about our manner of treating. We have been getting some results. I want to say this before closing, that I have got a force divided up into two divisions—one relates to inspection and one to treatment. One man has charge of the division of inspection, and the other has charge of the division of treatment, and I say to them: "If you find out anything new that will aid us, it is just that much for you; your pay will be accorded not exactly on the amount of work you do. If you find out anything new, we will tear to pieces the machine we have, if you will only show us some way of making it better." Consequently the boys are looking out for something; they are learning, and I will tell you something about this this afternoon.

Meeting adjourned until 1:30 p. m.

AFTERNOON SESSION.

Friday, August 23, 1:30 P. M.

The meeting convened pursuant to adjournment, President Hobbs presiding.

President Hobbs: We will now hear the report of the Committee on Exhibits.

AWARDING OF PREMIUMS.

The judges, L. B. Custer, of Logansport, Ind.; Mr. Henry, of Laporte, Ind., and S. H. Fulton, of South Haven, Mich., made the following awards of premiums:

Best collection of summer and fall apples—Walter Ratliff, first; C. P. Bradley, second; prizes $2.50 and $1. Best plates of Maiden Blush, Chenango strawberry, Benoni and red June apples—Walter Ratliff; prizes 25 cents each.

Best collection of pears—Walter Ratliff, first; C. P. Bradley, second; prizes $2.50 and $1. Best plate Clapp's Favorite—George Seeler; best plate

Bartlett, A. W. Matthews; best plate Flemish Beauty, C. P. Bradley, and best plate Tyson pears, H. H. Swaim; prizes 25 cents each.

Best collection of peaches—H. E. Haines, first; George F. Newton, second; prizes, $2.50 and $1. Largest and best Plate of peaches—H. E. Haines, first; George F. Newton, second; prizes, $1 and 50 cents. Best collection of plums—C. P. Bradley, first; W. C. Corney, second; prizes, $2.50 and $1. Best plate Lombard, H. H. Swaim; best plate Burbank, Mrs. B. A. Davis; best plates Abundance and Shipper's Pride, C. P. Bradley, and best plate German prune plums, J. B. Witmer; prizes, 25 cents each.

Best collection grapes—C. P. Bradley, first; H. H. Swaim, second; prizes $2.50 and $1. Best plate Moore's early grapes, H. E. Haines; prize, 25 cents.

Best muskmelon—J. W. Kring; prize, 50 cents.

President Hobbs: The next on the program is, "Why I Am a Horticulturist," by Mrs. Neal, of Albion.

WHY I AM A HORTICULTURIST.

BY MRS. ISABELLE NEAL, ALBION.

Horticulture is the art of cultivating gardens. Our first parents were horticulturists and the Garden of Eden was the highest ideal of God's conception of a beautiful dwelling place for them. In my fancy I see it, a land elysian of singing brooks and sparkling waters. There were azalias and rhododendrons, which grew into gigantic trees laden with a splendor of bloom and roses of immense size. The bushes were like the massive trees of Yosemite, and there were plants with flowers strange to be seen, and lofty palms with paths between, which stretched away into vast forests of delightful scenes.

Like that path in the wood where I used to roam,
  When the oak tree leaves were green,
And the wild bird built for herself a home,
  Concealed by the leafy screen;
The world never seemed to be half so good
As it did when I went to that path in the wood.

Adam and Eve were not content with their lives of leisure. God had given them the spirit of progression which gave them the desire to eat the apple. And there arose between them a contention. Adam said Eve was responsible for the desire for wisdom, and now because of this we are told that women are the weaker vessel. Show me the home of a horticulturist today where the wife is one of those weak-minded women seeking to better the conditions of her husband, preparing that which is pleasant to his taste, and I will show you one that is alert to his success.

But if there were no fruits forbidden, no joys to be denied; if the heart was never tempted and the soul was never tried; if there were no thorny pathways like the bravest feet have trod, the heart would grow indifferent and wander off from God.

I am a horticulturist because its pleasures are not confined to a few, but are so widespread that even the mechanic, the merchant, the banker, the clerk, the rich and poor alike can rest from their labors 'neath the shadows of their own vine and fig tree. The farmer that follows his plow and boasts of his broad acres of waving grain, his fields of tasseling corn and his meadows of sweet mown hay finds the one spot which is most attractive to him to be the horticultural department of his home; that Eden where Eve as of old is striving to make his home a paradise.

Oh, where could life be half so sweet,
So free from care and harm,
So independent and complete
As on a well-kept farm?

The horticulturist is a social character. With the aid of his happy family (for they are all members of our society) he brings to our meetings baskets overflowing with the best of his larder, saying nothing of the yellow-legged chickens and finest of fruits and flowers which satisfy the eye as well as the taste. Then he is a botanist. He goes down into the depths of the flowers, whose language speaks to the eye and the emotions of the heart. Thus the rose and the myrtle are symbols of love, the violet of modesty, the daisy of innocence, the lily of purity and sweetness, the orange blossom of charity, the laurel of glory, the amaranth of immortality and the ivy of fidelity. Each, speaking in its beauty and fragrance, arouses the better feelings and emotions of the heart. We touch them and we enjoy their sweetness; and if we but understand the language they speak to us we are made happy and feel the gentle influence of the sweetest things God ever made and forgot to put souls in. Flowers are capable of developing a love of beauty even where it does not now exist and also of strengthening it where it does exist. It is doubtful if a depraved nature could give full rein to its depravity when surrounded by the beautiful in art or in nature. There are instances on record of the softening of hard natures by the influence of flowers, and has not the criminal been brought to tears at the sight of a bouquet of old-fashioned red roses? They reminded him, he said, brokenly, of the roses in his mother's garden. Like old songs, they will come up in memory, at least some time, to be recognized and welcomed by the heart that has traveled back, ah, how far, to the old home under the hills, where in childhood's merry hours they used to play in the shadow of lofty trees, fanned by the passing breeze. And out of this old home of the past has grown for us the new home of today, having its works of art, its high walls and lofty domes kissed by the morning sun. The old landmarks are gone and we rest beneath their shadows no more; yet we oft times wander, as it were, down the path of that old home, while we drink in not only the beauty but the perfume of its long lost youth.

> Oh! could my tired feet once more
> Be guided to the old home door.
> And could I smell the mignonette,
> Those weary years I might forget.

Is it broadening too much the ordinary definition of artist to assume that whoever creates or produces—assisting and co-operating with nature—out of the crude matter of the soil objects that add to the beauty of the landscape, is an artist? The planting of a farm to flowers, vegetables, fruit trees, shrubs, canes or plants adds to the beauty of the landscape. How often have we admired the beauty of a plantation of fruit trees, such as apples, pears, peaches, plums and cherries or the smaller fruits in riding by even in winter when they were denuded of foliage, flowers and fruit; but how much more attractive they are when clothed with blossoms and foliage in May, or laden with fruit in summer and autumn. The florists who, through years, centuries and ages, have increased the species and varieties, adding immeasurably to their loveliness, have certainly contributed to the beauty of the flower garden. Our great variety of double flowers, with their numerous and varied forms, tints and colors, are the work of man. The great number of species and varieties of fruits owe their origin mainly to the efforts of man. Compare our most beautiful apples, such as Sweet Bough, Strawberry, Red Astrachan, Maiden Blush, Grimes' Golden, King, Northern Spy, Wealthy and numerous others of our own improved varieties with the primitive apple, if any such be found, and you will see how much the hand of man has done in adding to their beauty, to say nothing of the quality of the apple. How much the appearance of our landscape was enhanced last fall by the orchards on every farm bending under their burden of beautiful fruit. What an ornament to the table a dish of our finest varieties affords.

Consider the pear. Although not quite so remarkable for bright colors as many varieties of the apple, yet no one can deny that a tree loaded with any of our leading varieties, such as Bartlett, Clapp's Favorite or Flemish Beauty, are a great improvement in color as well as flavor upon the seedling. Then some of the varieties of the pear do not acquire their coloring until picked and ripened by the skill of man. And what relation has the peach to beauty? It is scarcely excelled by any other species of fruit. Whether we consider the white fleshed varieties, with their creamy skin changed to crimson by the rays of the sun, or the yellow fleshed, which are deep yellow in the shade and dark crimson in the sun; whether globular or oblong in form, they are very attractive on the tree or as a centerpiece on the table. Among the varieties noted for their beauty are Conklin, Crawford's Early, Crawford's Late, Alberge Yellow and Large Early York and many others. The plum has tints and shades of color differing somewhat from those of any other species of fruit. They are blue, red, yellow, purple, violet and carmine. Some of the Japan varieties are quite brilliantly colored, as are some of the Americanas. Thus we may continue through all the species of domestic fruit improved by the aid of man. The cherry, grape, currant, gooseberry, blackberry, raspberry and strawberry, each has a special beauty of its own. And all are such an improvement upon the natural production of their several species as to entitle their producers to be called artists. The earth has been made much more beautiful by their labors. In view of all the scenes that the horticulturist produces, that he who rides or walks may see how much he does to beautify the earth by improving upon nature, who would deny him a place among artists. He lives in a palace all his own, surrounded with beautiful landscapes, painted by nature, is king of all he surveys and his path is strewn with flowers.

I do not care what the flowers may be,
  Or coarser the shape or finer;
They are all one beautiful work to me,
  And God is the great designer.
Children of sunshine, earth and dew,
  And the great blue sky above them,
Delicate shading or gaudier hue,
  Flowers of the earth, we love them.

President Hobbs: If there is no discussion of this paper, we will pass to the next, which is, "Spraying and Spraying Mixtures," by Professor Webster, who addressed us this morning.

Professors Webster's paper was as follows:

Mr. President, Ladies and Gentlemen—After the smoke of the battle at Santiago had drifted away, we decided that although we had a Schley and a Sampson, and that they were good fighters, the victory was due to the man behind the gun. I want to make a keynote of this. I don't care what kind of a machine you have; I don't care anything about how you make your mixtures; I do not care anything about the mixtures themselves, unless I can know something about the man who holds the nozzle. Of the one hundred points in spraying, ninety of them depend upon the man who holds the nozzle, and we have found that out of about eighteen months' work, not only with one or two men, but with eighteen or twenty of them, not only in one orchard, but in hundreds of them; but in watching the spraying of several hundred other men, more or less careful in their work, we are just beginning to find out what spraying is.

I want to say something else, and I am perfectly willing to stand by it. I don't know how it is in Indiana, but in Ohio a man can not run a stationary engine without a license, and in ten years, I think, no man will be allowed to spray an orchard until he has had a thorough training and has a license or certificate. When you get to that, you will have spraying, and you will not have it until you do.

We have had to deal with all sorts of people. I have seen a man who intended to do good work, thoroughly sincere and energetic, and who had everything mortal man could have to do good work, to do a good job of spraying, but he succeeded in doing a very poor one, because he did not know how to do a good one.

I will give you one illustration of that. We have men who are starting out to spraying under about this condition of affairs: One or two men will buy a sprayer, an expensive spraying machine, one that has a capacity for doing a great deal of work, a steamer or some machine that is capable of doing a large amount of work, and then begin taking contracts for spraying orchards, not alone for insects, but for fungous diseases as well. Two brothers who, I suppose, were sixty or sixty-five years of age, men who were thoroughly honest and sincere, started out in this way, and I want to tell you how they sprayed the first orchard. I tell you they did a good job of it. They did not have an extension rod, but one man got up on a wagon and held the hose just below the nozzle, and they simply sprayed through them and let it come down on the trees, and they wondered why they did not get any results from it. They thought they were doing all right. So I want to impress that on you, that spraying, as it is done, four-fifths of it is wasted material. Yes, take the average fruit grower, not only in Indiana, but in Ohio and other States—there is not much difference in the way they do it. I know that to be true; we have found it out, and it has been illustrated again and again.

Now, as to the way we do this; it is just like this: I have had to deal with the same problem you have. I can carry, say, six men, by the month, through the entire year, but I can not carry twenty-five. In other words, I can not afford to hire twenty-five men by the month and drill them for the sake of keeping them through the winter months in order to spray. Therefore, I have to train up about one man to the machine, five of them, and for the rest we have to depend precisely upon the same kind of labor which you have to depend upon. We have to go to Cincinnati, or Cleveland, or elsewhere, and pick up our men, and pay them by the day, and the best I can do is to put a trained man in charge of each gang. That means, with an ordinary spraying machine, three men, one at each nozzle, and one at the pump, and I have to put a trained man over them with nothing in the wide world to do but to watch and see that they do the work right. It pays. Another thing that looks pretty hard. I got a pretty severe letter from a mother once, because, she said, I would not let her son talk. I let him talk all he wanted to, but not when he was spraying a tree, except in connection with the work. You can not talk politics or religion and spray a tree at the same time; you can't talk politics then, I don't care what your politics are; you may be a prohibitionist even.

Our work is all arranged just on that plan. With our steam sprayer it requires five men. We have two, one at each side to watch the men that they do the spraying properly, that they do not overlook a branch or a twig. It seems like, perhaps, a good deal of expense, and you probably think you can not afford it; but those men who do nothing else but see that the rest do their work as they should are the most profitable men you have, and you will find it so. But it takes a very peculiar man to go on a spraying force; it takes a very peculiar man. He must not only be able to detect the San Jose Scale, but he must be able to hold his temper, I don't care if a woman pitches on him; and the last is as important as the first. Talk about women holding their tongues! My goodness, me! It is not half as hard as for a man to go into an orchard and refrain from talking, except as related to the work, when they are spraying; but it is prohibited. There is no interruption; but, as I said before, I once got a pretty severe letter from a mother complaining about her boy not being allowed to talk. It is all right for them to talk sometimes, but not when working, excepting about their work.

Now, I want to tell you something about the machines we are using, and how we are using them. We have in the whole equipment one Orleans steel sprayer. We have four large three-hundred-gallon tanks, with a Morrill & Morley's pump. I do not want to advertise anybody's pump, but we use this because the men like it better and because they can do good work with it. We have been using four of those on our largest machines, except the steam sprayer. Now I told you this morning that the men are practically told to be on their guard, to be on the watch, and if they see anything about the machine that can be improved I want to know it, and they get full credit for it, and we will tear anything to pieces if we can improve it by any change. We have torn our steam sprayer all to pieces twice, and if we keep on we will get something that manufacturers never dreamed of making. When you get this one, you will notice that in front there is a barrel. As these machines come from the factory the tank is partitioned off. A portion of the front part is intended for holding water, with which it supplies the boiler. The first thing I knew my men in charge had the partition torn out, increasing the capacity, which means a good deal, because if we could have the whole tank full it would last about half a day, and they could fill it up again at noon; otherwise they would run out of material about 11 o'clock. By that means we get larger capacity. We put the barrel in front, and can supply the boiler from that by attaching a pipe from the boiler to the barrel. But we ran into another trouble. That pipe would freeze, and for a day or two it bothered us. Then we had stop-cocks put in, and when we had replenished the boiler as we let it out of the pipe we had no trouble with the freezing.

We find that some of the most favorable days for spraying is when the mercury is down to about zero somewhere. The question is how to spray under that temperature. I will tell you how we solved that problem, and I do not care how cold it is, we spray right along.

We made another connection with the boiler and put in hose so that we turned the steam directly into the tank—the way that is constructed, the excess steam goes through the tank in order to keep the material warm. We cut that out entirely and attached the hose directly to the boiler, so we can put them now right in the tank, and we can have three hundred gallons of mixture boiling, if we want it; and not only that, but in the morning we would bring the four tanks right along with the same boiler, and we heated the mixture in all of those tanks so we could use it.

But there is another problem that has an awful sight to do with spraying, both with the efficiency of it and the expense of it, and I do not know whether we are going to be able to do much with it or not, and that is the wind. Some of the recommendations regarding spraying you see so much of, read very nicely. It is very easy to spray if you can get a room like this is to spray in, where there is no wind at all. That is a very easy matter; but if the wind is blowing hard it is not so easy. You go out some morning and attempt to spray when the winds are going anywhere from fifteen to seventy miles and hour, and you will find that the mist that is spoken of is a good deal of a myth; spraying with a heavy wind blowing is not a very easy matter, that is, I mean effectual spraying. To do good, efficient work when the wind is blowing requires exceedingly good assistants. It adds greatly to the expense. It will make a difference of fifty per cent. in the cost of the spraying—I mean effectual spraying—between a calm day with very little wind and a windy day.

As I told you, we have to spray the peach trees in the spring. There are only about ten days or two weeks when we can spray the bearing peach trees. Sometimes during those two weeks the wind blows more continually than any other week in the year; for that reason our spraying has been somewhat expensive. This problem, if it can be, should be solved by somebody, but I am free to confess that we are a good deal puzzled to know how to go to work to overcome, even in part, the effect of the wind on our spraying.

We have overcome the effects of the temperature, and we can keep the mixture so warm that it keeps the hands of the men warm who are handling the hose. I presume the steam sprayer is new to the most of you, but I believe that with some improvement that will be just about the thing that will be wanted; then you educate the man to spray and spray right, and give him a certificate or a license, or whatever it may be, then he can buy a machine and go to work and take his contracts to do spraying. It is his business to do it at the proper time. You don't have to have that on your mind at all. That is his business to do it at the proper time and do it as it ought to be done. As soon as you have got trained men, you will be able to get it done right. So this outfit, or something like it, as I say, is probably what will be used in the future. I have no very large photograph of it with me. We also use the Eclipse, mounted on a large tank with a platform, that can be either raised or lowered. We have a platform attached to the front of the tank, and he can work very low down in that way. (Professor Webster is here using a photograph to illustrate.) Or when he wants to spray a high tree he runs the extension rod up and he can spray over a pretty high tree. This is the cheaper method. There is no expense for fuel, and it requires but three men, and the fourth one to see that it is done right.

Now, if you are going to buy a spraying tank, do not get a square one. Get a round one with a rounding bottom. If you are using Bordeaux mixture, or anything that needs agitation, cutting out these corners will have more effect in keeping your mixture well stirred. A great deal depends upon its being agitated when you are using arsenical poisons. We do not use anything else. With soap mixtures it is not necessary to have it agitated particularly, but we like them better, anyway. Our tanks are all like this (indicating), holding three hundred gallons of material, which lasts about half a day, and we do a great deal of work with them.

The difference between this and some sprayers is this: In your orchard, if the trees are uniform, so that the man on each side—remember, you have four lines of hose, two on each side—and the men can make equal progress, it is all right; but if the trees are not equal and some places a tree is gone entirely, one side, then, has to wait on the other. In other words, the progress is no more than what each side could do. For instance, a tree is out, then the man on the opposite side would have to wait until those on the other side had sprayed the tree that would correspond with his. In this case there is no such trouble. This is one of the things that is avoided by this tank and sprayers. I think I explained about our method of spraying the larger trees, so I will omit that part and tell you what we have been able to do. There has been, as you know, a great deal of discussion as to the results of the use of different kinds of mixtures, particularly that of whale oil soap. We were pretty badly discouraged. I know there was a little question as to whether we could do very good work with it or not. Now I have had a good opportunity to learn the effect of spraying with whale oil soap, where I had the men for about three months—the same men continuously, day after day—using the same mixture, soap of the same brand from the same manufacturers. Where the orchards were pruned but very little, if any at all, and the wind was against us at the time, we found that we only succeeded in killing about ninety-five per cent. of the scale; but where we had calm weather we have killed ninety-eight per cent., and we have orchards where we have not been able to find a living scale. I do not want you to understand that you can exterminate the scale in the orchard by one application; I only say that this was done last winter. About a month ago I sent one man to look over an orchard and sent another without letting the second one know the first one had gone, and neither found any. We have orchards we have not been able to find a scale in since we have treated them, and where they were badly infested before, and in no case have we found the effect to have been less than the extermination of ninety-five per cent. of the scale destroyed. That is what we have done with whale oil soap spray, with experienced men, who were doing the very best that they could.

Now, what we have done anybody else can do with the same equipment and thoroughly well trained men. In all the work we have done we have used something like twenty tons of whale oil soap, and there has not been a single complaint of any injury to vegetation. The most serious complaint I had was from a lady, I don't know her age, and I do not know whether she was married or not; but she complained that we ruined her poodle by its getting out and getting sprayed. So I can say this much about whale oil soap, that you, yourself, can put it on so that it will be effective, if you know how, or have experienced men to do it. I have told you of its efficiency, and there is one more point I wish to make, and that is that it will not protect a tree from reinfestation, I do not believe, twenty-four hours; it offers no protection from reinfestation from adjoining trees or adjoining orchards.

I desire now to take up the matter of the use of crude petroleum. I have done some experimental work with it, and there has been careful application of it made by the owners of the orchards, and we are just getting some material together that will mean a good deal when we get through with the season. Crude petroleum acts very peculiar in its effect, not only upon the scale, but upon the tree itself. It is a very easy matter to spray a tree and not hurt it any, and it is a very easy matter to kill the scale, but when you come to combine the two you have got something else; that is where the difficulty comes. We find it has a very severe effect upon the tree, and anything less than twenty per cent. of crude petroleum is ineffective, and anything more than forty per cent. injures the peach trees more or less seriously. We have killed peach trees by using twenty-five per cent. of crude petroleum, and we have sometimes not injured them with fifty per cent., but where the injury is done with twenty-five per cent. they were very thoroughly sprayed.

You will be more apt to do inefficient work in windy weather; and you can not do as good work in a high wind as you can with the soap mixture. So far as I can see there is no difference in the effect, so far as specific gravity is concerned. We use oil whose specific gravity is 43 or 44 and we use it down to 34, and I can not see that the trees killed with oil whose specific gravity was 44, was any more than those sprayed with oil whose specific gravity was 34. We have been hoping that there might be a difference in favor of the heavy oil as regards reinfestation, but we got very disappointing observations the other day by finding the young scale settling down on peach trees where we had used the heavy oil and where we had done a good job of spraying. When we get through the season we will be able to tell you more about that, but at the present time, as to protection against reinfestation, the outlook is not very encouraging. At the present time I see nothing better than to go on with the use of whale oil soap. I do not think we have got to the point where we can put crude petroleum in the hands of inexperienced men, and until we reach that point I am much in favor of using the whale oil soap, for the reason that there is great danger of doing damage to the trees by the use of crude petroleum and there is not that danger with the use of soap. I believe we will leave that subject now and take up another one.

Of course, you will be interested in the pumps that are to be used because you have to use them in spraying. I do not care to be understood as advertising anybody's pumps, nor as running down anybody's pumps; but we confronted that problem last spring when we attempted to find out something regarding the use of crude petroleum and how we were going to do it. I got a Kerosine-water pump from the factory. There had been a good deal said about them. Before we did anything I wanted to know what we were working with and what we were doing, so I said to my man, "Go to work and see what you can do with this."

In order to find out just what we were doing you spray a little while, and if this is running nicely, instead of spraying a tree take two or three dozen fruit cans with you, and by standing these cans up you can spray into those fruit cans, and see what you have been doing. I will read you the results.

Instead of spraying 5 per cent. of crude petroleum we found we actually sprayed 3 3-10 per cent.; instead of spraying 10 per cent. we found we were actually spraying 13⅕; instead of spraying 15 per cent. we were spraying 85⅗; instead of spraying 20 per cent. we were spraying 19⅘; instead of spraying 25 per cent. we were spraying 11½ per cent. This was learned by stopping in the midst of the spraying and spraying into a fruit jar instead of on a tree.

We did not know but what something might be wrong, and so we cleaned up everything just as clean as if it had just come from the shop, and tried it again. We sprayed again, and then sprayed in the fruit jars, and this is what we got:

With the indicator set to spray 5 per cent. of crude petroleum we sprayed 9½ per cent.; instead of spraying 15 per cent. we were spraying 28 3-10 per cent; instead of spraying 20 per cent. we were spraying 16⅕ per cent; and with the indicator set for spraying 25 per cent. we were spraying 18⅖ per cent.

I gave it up, as I then decided that we could not tell what we were doing. I then did what Americans do not like to do, sent over to Canada. I was there last fall, and they were telling me a good deal about a spraying machine that they were making, to use crude petroleum. I sent over and got one, called the spray motor, manufactured in London, Ontario. This was arranged altogether differently from the one we tried before. Instead of mixing it, the petroleum was put in one tank and the water in another. It was drawn by a separate hose and is mixed as it goes through the nozzle. It is the best machine I have struck, by all means the best; it sprays more accurately, and it is the easiest pump to work we have had anything to do with, and so far as I can see it is the best thing we have yet invented for the use of crude petroleum mixtures, and if we do anything with the crude petroleum we generaly do it with the spray motor pumps. I think they will manufacture them on this side before a great while so we will not have to pay duty on them. The price depends upon the size. The price of the one I got is $35, and if you can get them to throw off the duty that is all it will cost you. I was in a hurry and I did not care about the duty.

I shall say a little more about the other spraying, because I know there are some here greatly interested in it. We have never been able to manage the codling moth satisfactory. We have been puzzled to know what was the matter, whether it was defective spraying or why it was that we could get the apples up until about this time, and then they would drop off in spite of all that we could do.

Last year, in a small way, we thought we would see if there was anything we could do to indicate where the trouble was. So I went up near the lake shore, just east of Toledo, and went into an orchard the day after the spraying was finished. They had sprayed with Bordeaux mixture, with paris green added, three times. The next day after the spraying we covered a tree with this material you use to cover your peach baskets with, that makes the peaches have a nice color. Well, we took that material and we covered the entire tree with it. Of course, you know you can not get two trees just alike in an orchard, but we took another as a check as nearly like it as we could get, and I will tell you what we did: We removed all the fallen apples from under both trees August 9; they were sprayed the last time the 23d of June, and covered the 23d. On the 14th of September, which you will remember was immediately after a terrible wind storm which spoiled acres in Ohio and Indiana, there were removed from under the tree that was covered 229 apples; 59 per cent. of these were sound. From under the uncovered tree there were removed 1,052 apples, not over 10 per cent. of which were sound. The cloth was drawn over the tree and fastened at the trunk underneath. We took the apples out from under the cover and then replaced it. October 22 there were picked from under the covered tree 372 sound apples, 8 wormy. Of the windfalls, 18 were wormy. From the checked tree, the one that had not been covered, we picked 253 sound apples, 41 wormy. Of the windfalls, 104 were wormy and 94 were sound.

Recapitulation: The covered tree, after the fruit was removed from beneath, on August 29, carried 622 apples. Of these 372 were gathered in sound condition, and 26 were wormy. The uncovered tree, after the fallen fruit was removed, August 29, carried 1,544 apples, of which 347 were sound when gathered and 145 were wormy. The summary would read thus: Covered tree gave 507 sound and 120, 19.1 per cent., wormy; the uncovered tree gave 452 sound and 1,092, 70.7 per cent., wormy. This, I think, shows pretty clearly what the result would be if we could manage the second brood of moths.

You can spray your orchard carefully and effectually, but your neighbor just over the fence will raise enough moths to bring on a second brood that will do you a great deal of damage. This experiment was made to show that. You can reach the second brood of moths when the calyx end of the apple is turned outward, if you can get the poison there, and we are trying this year an experiment we hope will do that very thing. We are using, instead of paris green, arsenite of lead, something that adheres to the tree. They are using it with Bordeaux mixture, trying to get it in the calyx of the apple, before the calyx closes over, to see if it will not kill the second brood. It is too early to see, because we have not reached the time, but we will be able to say in a few days what effect this has upon them. At the present time we can not say, but I can say this, that since we have used the Bordeaux mixture and the arsenite of lead, there was very much less fruit dropped from the trees where we used the arsenite of lead. There is that difference in favor of the arsenite of lead, although it is a little more expensive.

If we can succeed in finding something that will protect the apple from the second brood we will have to find something that will protect the man who sprays from his neighbor who does not.

I desire to speak a little further about this matter of spraying being done by inexperienced men. It can be no better illustrated than by this: People seem to think that spraying is something that can be done when they have nothing else to do. I want to say to you in this connection it is something you can not put off. You can not do that. When the bloom falls off from the apple you will find the calyx open in that shape (indicating); a little later it begins to draw in and continues until it is closed so it is almost impossible to get the poison in. If you spray your trees when the calyx is wide open and it catches the poison in it and it fixes there until the calyx closes and covers it, then you have accomplished all that you can with one spraying. If you let it go because something else is hurrying you, thinking you can do it when you can not do anything else, then you will see what a difference there will be.

This is the very reason, more than anything else, we are coming to the point where this work will be turned over to a professional man, a professional sprayer. The time will come when we will turn the matter over to them and pay them so much a tree, and pay no more attention to it. You will get rid of that bother; you will know that it will be done right and at the proper time. And what I said in regard to careful spraying will apply just exactly as well in your apple orchard as it will elsewhere.

There is one point I have seen agitated much. We spray apple tree limbs, but how about the trunk, and how about the grass and leaves underneath? It looks as though we have been leaving out one of the most important points, where we simply spray the tree and let everything beneath it go. Now, it seems as though the better way is when we finish the tree to give the whole area underneath a pretty careful spraying and finish the job up in good shape.

President Hobbs: How do you apply the spray? How does the man hold the nozzle? Where does he begin and where does he wind up? Does he spray from underneath, on top, or how does he do it?

Professor Webster: We spray both from underneath and on top, or from above. All our nozzles are attached to extension rods, and we start at some particular point on the tree, and go over both the under and upper side, until we get around to where we were when we began. I do not know whether you do it here or not. They have a way in Ohio of spraying one side of a tree when the wind blows from that way, and spraying the other side when the wind blows from the other way, but in the meantime the dividing line gets badly obliterated; some of the limbs get a double dose and others none at all. It is a very bad practice.

President Hobbs: How do you do if the wind does not change at all.

Professor Webster: Some are waiting yet for a change of the wind. In the meantime, we must finish the job for the protection of the neighbors. If I have overlooked anything I wish you would call my attention to it; and also feel at liberty to ask all the questions you desire and I will answer them if I can.

President Hobbs: You say your State appropriated $15,000 for the extermination of the San Jose Scale; I wish you would tell whether the State has got its money's worth?

Professor Webster: If it has not, it has not been our fault.

President Hobbs: The point is this: I wish to know whether you are hoping to be able to, or whether you expect to exterminate the scale, or what the practical results are?

Professor Webster: The time has gone by when we can exterminate the scale in this country. The time was when it could have been done, but hat time has long since gone by. The most we can do now is to keep it down. I can illustrate that very nicely: We have some nurseries in the State with that scale creeping up nearer and nearer every year. We have to stop it, or those men will have to go out of business. If we can not check it so it will not spread any more, they will have to move or go out of business; if we can check it, we will protect their property. All I am expecting to do with what we have got, is to get it under control, and if the State will give us money to keep it there, well and good. I have been working this very hard. If I do not get anything more in the way of an appropriation at all, we will have received enough out of this in the way of spraying experiments, and what we are now learning in the way of methods and machinery, to have made it a profitable investment. The nurserymen and fruit gowers may not have $15.000 worth of information, but they will have a great deal more than they had when we began. I think we shall be able to tell them enough that they will save not only $15,000, but a great deal more.

Professor Troop: As to the professional sprayer, isn't there the same danger here that we have in the professional tree pruner in our cities under the present conditions?

Professor Webster: We have no professionals now, that I know of. My idea is this: You will have a class down at Purdue to drill in spraying, careful spraying, and the mixing of the ingredients and the application of it by machinery, and the machinery and everything connected with spraying. You and Professor Goff will have that in less than ten years.

Professor Troop: We have now.

Professor Webster: When they go out from that university, their diploma will show that they are competent to do just that kind of work. I do not know whether it will come up in the form of a license or not, as in the manner of stationary engineers in the State of Ohio; it may, or it may come up in the way of a diploma, but we are getting to that point, and sooner or later we can debar a man from doing any business in spraying, unless he is competent to do it.

Professor Goff: But recently it has been advocated in some agricultural papers that a man in every township take up the matter of spraying in the township, but there is the very danger we have been talking about, unless he is a trained man.

Professor Webster: We will hasten the time when a man must show he is capable of doing what he pretends to do.

Mr. McMillan: What do you do toward protecting the body of the tree? Do you do anything toward protecting the body of the tree, and the roots from disease?

Professor Webster: I do not know that I catch your meaning; protect them from what?

Mr. McMillan: Against borers.

Professor Webster: No; that is entirely foreign to anything included in our duties.

Mr. Bradley: I would like to know if you have had any experience with the Hazeltine Moth Catcher, advertised?

Professor Webster: I have not had anything to do with it at all. It is good for nothing. I have received letters from them and never answered them. They have written me again and again, but I have never replied. A few days ago I received a letter from them asking why I had never answered their communications. Mr.————————had one sent to him for trial, and he put it out in the orchard to catch the insects. He brought it in in the morning. He had caught a lot of insects; some injurious insects, and a good many beneficial insects; some destructive to some things, but not at all to the orchard; but if there was a codling moth caught with those this summer, it succeeded in getting itself so badly used up that we could not recognize it.

Professor Troop: I would like to give a moment to this, because this moth catcher has been so extensively advertised over the country the past summer that it deserves some attention. People do not know what it is, they do not know the value of it. I have used this moth catcher. I used it last summer, putting it in the orchard about the time the codling moth makes its appearance, and my experience has been the same as Professor Webster's. I have not succeeded in finding a single codling moth in the pan this summer. We got May beetles, and several other kinds, a good many beneficial, but not a single codling moth.

Professor Goff: We have had about the same experience in Ohio as you have had in Indiana. We caught a good many insects, but not a codling moth, so far as I am able to state.

Professor Latta: As to the first and second broods of codling moth, I would like to ask Professor Webster what per cent. of the codling moth has come from the first and what from the second hatching?

Professor Webster: Do you mean in any particular orchard?

Professor Latta: Any particular orchard that has been sprayed?

Professor Webster: It is pretty difficult to state, only in a general way. We have had just this trouble: We spray carefully, and there would be scarcely any apples drop until about this time or later. Now the best we can make out of this is this, that we had destroyed all of those worms before they had got into the apple; we could not make anything else out of it. Then in September comes another regular shower, and ten, twenty, thirty, fifty per cent. or perhaps more, of the apples fall to the ground and are wormy in spite of anything we can do. The only construction we can put upon that is that the moths that hatch in the adjoining orchards deposit their eggs on these apples, and in that way the man who sprays suffers for the neglect of his neighbor.

Professsor Latta: Another lesson in co-operation.

Professor Webster: If we can only get so we can do it.

President Hobbs: How strong a solution can you use on the apple. say, when you spray for cankerworm?

Professor Webster: We have got to the point where Paris green is a little too much. I suppose we could use six ounces, instead of four, to fifty gallons of water, if we used lime with it; that is, if the Paris green is as it is supposed to be. I do not remember that we have ever tried to use more than that.

President Hobbs: You know originally the farmer was to put one-fourth of a pound to fifty gallons of water; he increased it to one pound.

Professor Webster: Do you find that effective as against cankerworm?

President Hobbs: Yes; if it is applied properly.

Member: I used to spray for plums several years ago, and it did not do any good at all. Then I made the mixture stronger and it destroyed both the leaves and the plums, and I thought it was going to destroy most of my little trees. I used about five tablespoonfuls of Paris green to one gallon of water. I killed the plant lice, and I nearly killed my little plum trees. However, they revived and are now growing. I would like to know what the proper thing is to spray with for plums.

Professor Webster: It is a wonder you did not kill all of your trees to use Paris green in proportions like that. I think Professor Goff answered the question this forenoon better than I can, in spraying for curculio. Do not wait until the plum has started. The insect hides away on the ground in the leaves over winter, and does not lay any eggs until spring. Just as soon as the first warm days come in the spring they get on the buds and feed on the new buds and twigs. If you will spray just as the buds are beginning to come out you will kill a good many of the curculio. You will kill, I think, more at that time, than at any other time. So I would say, so far as that is concerned, to use the spray before the blooming, and you can spray afterwards, too; but you will find you get a good deal more good from the first spraying than any other. As to spraying for leaf-louse, I think Professor Goff told you, you would have no trouble, then, if the tree is in good thrifty condition. We have used for that, whale oil soap suds; use one pound for four gallons of water. We have sprayed with that and got very good results and it pays to do it at the right time, for after the leaf begins to curl it is almost impossible to reach the insect. In the curled leaves you can not do it with any spray; but if you take it in time, and use whale oil soap mixture, I think you will succeed in keeping them down.

President Hobbs: To those who are experienced in spraying the peach and plum with Paris green mixtures, I think they will stick to the original formula of one-fourth of a pound to fifty gallons of water. There is no question about the foliage of the peach and plum being very sensitive to arsenical poisons, and I know when this was first recommended some years ago for the plum curculio, Mr. ————, of New York, an extensive flower grower, killed over one thousand bearing trees by using a little over one-fourth of a pound, a very severe loss to him. I do not think he has forgiven Mr. Cook yet, for it. Mr. Smith, I will ask you the question: Has spraying paid you?

Mr. Smith: I never received any benefit from my orchard until I sprayed it, and I have got something off of it since. I got some fruit last year, and I am going to get some this year; but I will say I have a neighbor who has been spraying all summer, and he is not going to get anything.

President Hobbs: Would you care to state why he will not get anything?

Mr. Smith: I do not know. Part of his orchard is on much lower land than mine, but he has the same kind of trees set, and at just about the same time as mine. I do not believe he has cultivated his orchard as much as mine, although mine has not been cultivated much in the last two years; since the biggest limbs have become so low it is impossible to get through. If you will pardon me just one suggestion that comes to me at this time, concerning the heading of trees low. That may be all right for peach trees; I judge it may be; and it may be all right for apple trees, but I do not think so, if we are to take the modern methods of cultivation of the orchard, for we will not be able to get under the trees. Peach trees can be kept in and you can reach under them, but apple trees are large trees. If I cultivate my orchard, I have to repeat what I did a few years ago, cut off a large number of large limbs. My experience has been with the apple and pear trees, they do not get higher, they get lower. As they reach out, the limbs become heavy and the weight of the limbs bring them lower and lower each year, and when you come to putting a few bushels of apples on them they will come down to the ground practically, and when the tree is full of fruit the limbs will drop down until they lie on the ground. I have had limbs in my orchard lying on the ground. So I am now somewhat in favor of headind the apple trees higher, because I have once or twice taken off very large limbs that I might cultivate the orchard, and I have to do it again, if I cultivate it. I am now trimming my trees higher than I did at first.

President Hobbs: We will now pass on to the next topic on the program, which is, "Why Prune and Thin?" by Prof. E. S. Goff.

Professor Goff: Mr. President, Ladies and Gentlemen—When I noticed the wording of the subject on the program, "Why Prune and Thin?" I thought at first that there was very little to do, because you only asked me to say why I would prune and thin, which could be told in a very few words; but I have since changed my mind about it, because really it involves the whole problem of pruning, for if we know why we prune, then we will know how to prune.

PRUNING AND THINNING.

BY E. S. GOFF, WISCONSIN.

[Abstract.]

From specimens of apple twigs, the speaker showed that most of the buds that form on the young wood fail to develop into branches. Many never start at all; many that do start are crowded out by shade produced by the growth from the terminal buds. Some develop into fruit spurs, which may continue to bear fruit during several years if the growth beyond does not become so dense as to unduly shade them.

Nature prunes trees by the most costly of all processes, i. e., by starving the superfluous branches to death. The fruit grower may aid nature by cutting off the superfluous branches while they are small, thus permitting the nourishment that would otherwise go to them while they continue to live to be used by the other branches.

Flower buds are mainly formed on fruit spurs, in the apple, but they will not form without plenty of light. It is, therefore, necessary to keep the outer ends of the branches sufficiently thinned out so that all of the fruit spurs may have access to plenty of light.

Certain varieties of the apple, plum, peach and some other fruits tend to overbear in seasons favorable to the production of fruits. In this case the fruits should be thinned, while small, by picking off those specimens that have been injured by insects or that are undersized. Thinning enables the rest of the fruit to grow larger, tends to keep certain insects in subjection, reduces the draft upon the tree and relieves the necessity of

marketing an inferior grade of fruit that never pays expenses. It also helps the fruit grower to build up a reputation for choice fruit. Thinning does not, however, increase the total yield of fruit. On the contrary, it generally reduces it.

President Hobbs: I would like to ask this question: Are fruit buds and wood buds interchangeable? That is, will the flower bud become, under certain circumstances and conditions a wood bud, or vice versa.

Professor Goff: On that point, I can say yes, in the case of the apple; it is practically certain, in case of the apple, that the bud may become a flower bud. I limit it to the apple, because the apple is the fruit regarding which I have been able to make an investigation.

President Hobbs: How late?

Professor Goff: It depends upon circumstances, when the conditions come. The flower will form sometime during the summer, in the month of September. It may form as early as July, or it may form as late as September.

President Hobbs: It can't possibly form in the spring, are we to understand?

Professor Goff: No; I don't think the flower bud ever forms in the spring.

President Hobbs: When fruit buds are pretty generally killed during a severe winter, when the buds have become scattering, it has sometimes been that they have been converted from the wood buds into flower buds, have they not?

Professor Goff: I do not think so. Of course, I would not say positively. I know it is rare, and I think it is impossible. As to the question, will the flower or fruit bud turn back to a leaf bud, I would say, I think if that occurs, it is rare; I think that after the flower is finished, and formed into a bud, and formed all the parts, it never can change. It is true, however, flowers do sometimes develop leaves after they have commenced to form. I suspect the reason is this: The flower commences to form and forms part of the organs, and then conditions change so the growth impulse is encouraged. In regard to other fruits, I think it is true of the plum, the cherry and the peach. We all know of the peach, that of the three buds that develop side by side, the outer ones form flowers, and the other one continues the growth. In the case of the plum, the central bud will also develop into a flower. It is also true of the peach, that the side buds may also develop into branches. So I think that I can make this statement regarding the bud of the apple, the plum, the pear and the peach—these are the only ones I have studied

—any bud may become a flower bud, and when it becomes a flower bud depends entirely upon circumstances.

Take this branch (holding branch in hand). The growth commenced at this point two years ago. Some have continued to grow. Here is one that stopped growing early. It possibly developed into a flower bud. Here is one that may possibly have flowered last year. This one did not do so, because it grew. This one, if it continues to grow, will finally form a flower; it may be next year, it may be in five years. The case depends very largely, if not wholly, upon nutrition, and the amount of water and light. If they receive the right degree of water and the right degree of light, they will form flowers; if they receive more they will not form flowers. If we undertake to extract water from a tree in order to produce flowers, we shall probably fail. The branches must be in healthy condition or the bud will not form flowers.

Professor Latta: What is the principle underlying the growth of trees late in the fall? Something was said about late cultivation tending to continue the growth.

Professor Webster: The second growth period often occurs in August. It does not often occur. Just why this second growth period occurs is not very well understood, I think. It is possible it may be explained in this way: What cuts off the first season of growth is a shortage of water. The tree in the spring is filled with water. When the growth starts it draws on the water rapidly. Pretty soon it comes to pass that there is not water enough to keep up the growth of the leaves. By and by the amount of leaf surface develops, and, taken in connection with the fact that the weather is growing warmer and drier and evaporation is increasing, the tree will stop growing for the reason that there is not enough to supply those leaves and continue the growth. When this growth ceases, we have a reaction. The growth has ceased, and the amount of water used is less. The roots may be able to accumulate a little again. If we have more wet weather, it will again start a second growth.

Member: Will it not sometimes happen to those in a dooryard where you have all the water you want, and more than you want?

Professor Webster: Very likely it would; if a tree receives an abnormal amount of water, it will tend to continue the growth, but those trees, as a rule, do not form any flower buds. There is one point that has been lately recognized, that the conditions that make a crop of fruit. a good many of them do their work, or act, the proceeding year. For instance, the fruit crop for next year will depend very much upon the weather this summer. It makes the subject more complicated, but it is true. The fruit crop for next season has perhaps already been settled.

largely. The development of that crop will depend much upon the weather next summer, but the beginning of it has already taken place, probably.

Mr. Snoke: Would not early pruning, say September pruning, have the effect of producing flower buds? I saw a statement in an agricultural paper to that effect, that pruning early in September would have a tendency of producing flower buds.

Professor Webster: I do not just see why it would do it; and I am not prepared to say it would not. It is well known that pruning early in the spring and thus checking the growth, will tend to make flower buds for the next year. Just why pruning in September would be more effectual than at any other time, I do not now understand.

President Hobbs: It is now getting late in the evening, and I believe Professor Latta has a few words to say before we adjourn, and we will hear him at this time.

Professor Latta: I would like to make an announcement or two before we adjourn. Professor Goff's talk has interested me very much, and I wish that I might sum up in a few words the good things of this meeting. I could not do that now, but I am sure you will all agree with me that instructions of the highest order have been given here during these few days; and I think you will agree with me when I say that I believe from the interest that has been manifest here, that many have been studying along these lines as well as listening to the papers and addresses given here: and I believe they will go away thinking about these things and investigating. I believe that the good of gatherings like this can hardly be overestimated.

Do you know, brothers, that in a child the perceptive and receptive and reasoning faculties are keen. The boys and girls see and hear lots. And there are boys and girls here today who have seen and heard a great deal today. If their powers, home-training and early school training have not been sadly defective, they will come to a new womanhood and manhood.

Now I want to make a plea for a school; not for a day, nor for two or three days, but for weeks and months and years, for these boys and girls who are just coming into womanhood and manhood, with those observing powers still keen, with life still before them, for a good outlook for long years. Imagine that this meeting might be continued, we will say high class instructions, from day to day, before these bright pupils with their keen intellects, those who are not yet loaded with the cares of life and its responsibilities—who can say how much they could get from a few weeks, or a few months, or years of such training, such instructions? That is just what is being done for the young people at the great agricultural college. Such a meeting as we have had today is prolonged through weeks and months—of some kind of systematic study. They are taught all the whys and wherefores, by doing a thing precisely the wrong way, and then the right way, in various ways, until the best way has beeen clearly demonstrated and is definitely fixed as a part of his method.

Who can estimate the value of this kind of instructions at this stage of life, which this college is fitted to give? We hope to add some young people from this county, and from the portions of the State represented by this audience, to the number at Purdue. We know Michigan draws some, and Wisconsin draws some; we do not want them to all go over there and receive their training; we would like a share.

I know that these young people at such a school get an inspiration and an incentive to carry out and continue what they learn there to make successful fruit growers, agriculturists and stock growers. I will not take the time to go into details; you have a very good idea of what we are doing by what has been said here before, that is, as to the methods and purpose of such a school. But this I wish to say: I wish you to bear in mind that the facilities at Purdue are being improved; our new building will be the best on the college campus, which is now in process of erection, and will be for the exclusive use of the school of agriculture. That ought to be pleasing to the farmers and fruit-growers. It will be not only the best building in construction, but it will be the most imposing. It will be the largest single building on the campus. You have no idea what a nice building it is. We want you to come down and see it for yourselves and see what we are doing along these lines.

Now, as to what we are doing for the girls. We have been for over two years, giving to young women who come for instruction, a course in domestic science. It includes household chemistry, cooking, and studies along this line; combined with horticulture that makes a very nice course. We had Mrs. ————, of whom Mrs. Meredith spoke, with us last winter, and we shall, I think, have one of her pupils with us the coming winter, to continue this work. We want to continue the work, and do not want you for a moment to think that the girls are being neglected. We are looking after this work, and expect to meet the demand for it, and only desire to have the demand increased. I think we may be able to, a year from this coming September, incorporate this work as a part of the regular work. We are trying to do so, and we are giving the young people special preparation for their life work, and with that we add an incentive and inspiration to use their splendid training in the every-day walks of life. And I wish to say that seventy-five per cent. of the graduates of the school of agriculture are now in the fields.

The last meeting of this series will be held at Huntington, Tuesday and Wednesday of next week. I should be pleased to have anyone who can, from this audience, attend the meeting there. The purpose of that meeting will be for the benefit of the people engaged in raising stock, especially those engaged in growing stock hogs, sheep and cattle.

President Hobbs: I wish before adjourning to commend this audience for its good attendance and interest in all of the sessions of these meetings. I wish to commend the local horticultural society for its efforts in making our stay here so valuable and pleasant; and we are certainly very much pleased with their excellent fruit display.

FORTY-FIRST ANNUAL MEETING

OF THE

Indiana Horticultural Society,

HELD IN

Room 12, State House, Indianapolis, Ind.,

DECEMBER 5 and 6, 1901.

MORNING SESSION.

Thursday, December 5, 11 A. M.

The President, Mr. Hobbs, called the meeting to order and declared that the first business in order was hearing and disposing of the reports of officers.

Prof. James Troop, Secretary, made his report, as follows:

SECRETARY'S FINANCIAL REPORT.

SUMMARY OF RECEIPTS FOR THE YEAR ENDING OCTOBER 31, 1901.

Received for membership fees	$108 00
Received for fruit sold	12 01
Total	$120 01

SUMMARY OF CREDITS.

Due secretary October 31, 1900	$6 95
Paid for freight and express	15 84
Paid for postage, stationery and printing	65 37
Paid for telegrams and telephone	1 43
Paid for typewriting	1 00
Paid for traveling expenses	7 20
Balance due the secretary	22 22
Total	$120 01

ACCOUNT WITH THE TREASURER.

To balance on hand November 1, 1900	$351 82
To cash from secretary for membership fees	108 00
To cash from secretary for fruit sold	12 01
Total	$471 83
He has paid warrants 1 to 29, inclusive	484 96
Overpaid and due treasurer	$13 13

J. TROOP,
Secretary.

The Treasurer, Mr. Sylvester Johnson, not being present, his report was deferred until a later session.

Mr. Hobbs: I will appoint Mr. W. C. Reed, of Vincennes, and Mr. E. Y. Teas, of Green's Fork, as a Committee on Exhibits.

Mr. Hobbs, President, then read his address, which contained a survey of the year's experience in horticultural matters, together with lessons learned therefrom and suggestions for the future. (No copy of his address was obtained.)

Mr. W. W. Stevens, Mr. L. B. Custer and Mr. Campbell were appointed as a Committee on the President's Address.

Mr. Hobbs: We will now consider the subject of "Conditions of Success in Growing Stone Fruits." Mr. H. P. Dean, of Greenwood, will introduce the subject by considering the peach.

PEACH CULTURE IN INDIANA.

BY H. P. DEAN, GREENWOOD.

Now as to the subject of growing peaches successfully, I will divide it into several parts, the first being: Necessity of healthy and reliable trees. To secure these, you must either know your nurseryman, or, better still, grow the trees yourself. To obtain trees that are absolutely healthy, seed should be secured from wild or seedling stock, as far south as Tennessee or Georgia, on elevated lands, where severe winter killing and premature ripening are unknown. Next, buds should be secured from bearing trees to insure not only infallibility in varieties, but freedom from diseased stock, which can not always be discerned in younger trees. The practice of nurserymen of cutting buds from nursery rows is bad for the ultimate success of both themselves and the grower.

There is some good authority for the statement that trees bear earlier when budded from bearing trees than from nursery rows, but on this point I am ignorant and would gladly learn if any present have made any investigation of that subject. I would consider this of much less importance, however, than the need of trees that are true to name, and of healthy origin. I have seen much loss to amateur growers by lack of care on these points alone, but there are other errors to be avoided.

The second part essential to success is: Proper location and soil. My experience from boyhood has been limited, having had no practical knowledge of peach growing except on the bluffs of the Ohio river, between Madison, Ind., and Louisville, Ky., on lands overlying the cliff limestone. Yet we know of successful orchards on the sandstone formation, of which the noted Willey orchards of years past on the knobs near New Albany, Ind., and the Freeman orchards of Brown county of today are examples. There is also the extensive peach industry of Michigan on the low, sandy ridges bordering the lakes, and of New Jersey on sandy plains but a few feet above the level of the sea. These last named places could not possibly be successful without the modifying influences of those large bodies of water. I think that in neither of the last two named localities does the fruit ever reach superior quality in point of richness of flavor that makes a perfect peach.

There has recently been enormous plantings on elevated parts of Georgia which are very successful. But in no place have I ever known of large successful orchards on rich alluvial lands, hence I would say secure elevated location, with clay subsoil, naturally underdrained, and comparatively worn lands, as new virgin soil, like rich alluvial lands, produce too vigorous growth of wood-making trees more susceptible to severe cold and lessening both quantity and quality of fruit.

The next thing necessary is proper cultivation, pruning and thinning. In planting it is better to have soil broken and well prepared, but trees can be planted in cross furrow and ground thrown back to trees with two-horse plow, after which ground can be broken. It has been our practice to plant on poor soil, sixteen and one-half feet apart each way, using trees one year from bud, and trimming off all side branches and top, leaving tree about three feet high, with three to five buds from which to make top the following summer.

There is no better way to cultivate a young orchard the first and second year than to cultivate the land in corn. Afterward the land should be broken early each spring and surface soil kept loose and mellow, and free from weeds, even if it require a second or third plowing. I would avoid plowing or stirring soil much after middle of July. On no account ever sow small grain or grass in peach orchards. There is nothing that I have knowledge of in fruit that responds as quickly to thorough cultivation as the peach. This very essential of constant and thorough cultivation is one of the strongest reasons for avoiding rich lands, in which case you will grow too much wood, and prolong the growing season, so as to endanger the loss of following crop, or the life of the tree itself on account of wood not being thoroughly ripened to stand severe winters. We have always found that the peach tree will stand severe pruning much better than almost any other fruit tree, hence we have used knife, saw and axe in various stages of growth in order to keep open head of tree to admit free circulation of air, heat and light of sun, all of which are essential to give color and flavor to the fruit. In addition to this, thorough pruning helps in the matter of thinning, which we find very necessary to produce good sized fruit whenever there is a full set of buds, in which case at least half or three-fourths must be pulled off. This is not always so, as more than half of our crops have been sufficiently thinned by frost.

As to the enemies of the peach, I believe it has fewer than almost any other fruit. The peach borer is most thoroughly combatted by filling a mound of earth about half a foot high around the body of the tree, and then tamping with the foot to prevent the fly from laying her eggs down near the tender roots, thus lessening the chance for the worm when small to enter the hard bark, and making it much easier to capture. To do this we dig the mound away in May and destroy the worm with a sharp-pointed knife, and replace the mound around the tree after a few days. The curculio, causing wormy fruit and curl leaf, can both be destroyed by spraying, a remedy we have never applied, and we never have thought our losses from these causes was very great. There is no doubt but what great benefits may be derived from an intelligent system of spraying where curl leaf is prevalent, as government experiments in California have shown.

The question of variety comes in as a very essential thing, but should be determined by experience as to which varieties succeed best in each individual locality. My father, Argus Dean, commenced his peach business with about sixty varieties, but after fifteen years' experience he had reduced the list to twelve or fifteen, as having quality, hardiness and a succession in time of ripening, so as to fill the entire season from July 1st to October. We afterward added to these and discarded others, as new and better kinds came up. So I would think it a most difficult thing to tell which certain varieties would do best. There seems to be an increasing tendency to sacrifice hardiness for fine quality, which may be well enough for a small orchard, but for an orchard for profit serious mistakes may be made. I once knew a neighbor who planted about 20,000 trees, and among them were about 2,000 of one variety that did well on Chesapeake bay, his former home. But during the entire life of the trees he never gathered twenty bushels of peaches. Although the quality was superb, it demonstrated that a peach of any one variety will not prove profitable in all places. Now, in attempting to grow the peach in a climate where nature did not plant it, we can not hope to secure perfect results, yet the partial returns will amply repay us for our care and labor, in our efforts to have and enjoy this most delicious of fruits. Extraordinary severe winters are our greatest hindrance, as under some conditions we will sometimes lose years of labor and waiting. I have no doubt but a wind break of the natural forest, sheltering the orchard from the north and west winds is a great help, but does not always prove effectual. It is hard to lay down rules and methods of culture that will prove successful when there is absent the grower's love of his business. Constant thought, care and attention to the needs of the peach orchard, in each individual location, is most essential. It was once said of a most successful peach grower that he knew every tree and peach in his extensive orchards, so constantly did he visit and walk through them. There is so much evidence of neglect of orchards all over our country that it seems hopeless to expect any measure of success until planters learn that the same amount of thought and care of orchards as is given to their farms will render the orchard the most profitable part of their lands.

DISCUSSION.

Mr. Grossman: He made a statement in regard to spraying—that he did not think the expense justified it. I have found during the past season that peaches that were thoroughly sprayed, just one good spraying, were far better in our community than those that were not sprayed. Nearly every peach was perfect. Mr. Hobbs saw the peaches when they were green, as I sent him some specimens. That orchard was noted for the fine peaches and nearly every peach in the orchard was perfect, no curculio whatever, while orchards on adjoining farms were not sprayed and the fruit was knotty, and while there were some nice specimens, they were not as nice and large as those sprayed. Everybody had peaches there, but there was no trouble to sell these at $1.50 per bushel. Apply Bordeaux and Paris green just after blossoms fall, one spraying thoroughly is sufficient. In spraying we used just double the quantity Professor recommended last winter—one-half pound Paris green, six pounds blue vitrol, six pounds lime to fifty gallons water. This did not hurt the foliage.

Mr. Apple: I would like to ask whether this spraying of Bordeaux mixture will affect the insect, or whether it will prevent curl leaf in peach?

Mr. Flick: The chief use of the Bordeaux mixture is to prevent fungi and has but very little if any effect upon insects.

Mr. Tilson: I want to know how to trim a peach tree.

Mr. Dean: In trimming trees we trim to one stick, after that we do but very little trimming except to form a head, and we do that with about three or four main branches. We have never practiced heading, but we have thinned out the center, allowing these branches to grow out as much as possible so as to leave an open head. We have better results with that kind of trimming than anything else. As I have never practiced heading it would be impossible for me to tell whether there is any difference, but they will make a better growth and can stand more trimming it is said.

Mr. Burris: I would like to ask Mr. Dean if he did not find trouble in fruit breaking trees down in case of storm?

Mr. Dean: You have more trouble on that point than where we are located. Trees do not make as vigorous a growth as on soils here. As to breaking down, we always thin our trees, especially those where in danger of breaking down.

Mr. Stevens: We have some peach growers in our community who cut off about one-half of that season's growth in fall in order to secure a better crop the succeeding season. Is there anything in that?

Mr. Dean: I do not believe it would be anything towards insuring a crop. The main trouble we have is with severe winters, and more than half our crop was thinned by frost. Peaches do not succeed well on rich soil. You want poor land. You can grow nice peaches on rich soil but not of a good quality.

Mr. Thomas: He said he would cut his buds from the high hills of Georgia. The thought came to me, as I live near the northern part of the State, that to get trees budded from southern stock they would be apt to be more tender, but if you get them from the north, are they not acclimated to northern winters?

Mr. Dean: Get the seed from Georgia with which to start the stock.

Mr. Milhouse: Can we successfully grow peaches on the level, clay soil we have here in Marion County? I have a piece of ground naturally poor, of course not as poor as some, but itis not as rich as it might be, and I have in mind to plant peaches on it. The ground is rather inclined to be level and well drained, but if it is not profitable to plant peaches on that ground I should like to know it.

Mr. Dean: Elevated land is most desirable, as spring frosts do not affect it.

Professor Beach: I have been exceedingly interested in the President's address, and what he said about growing plants in Indiana, and also the paper by Mr. Dean on peach growing in Indiana, and it is impressed upon my mind more firmly than ever, though it was impressed before, the necessity for each man to study his own conditions, and after having gotten what information he can from other people, he can work out his own salvation in fruit growing, whatever it is, from strawberries to peaches, according to his own likes and dislikes, circumstances and surroundings. With regard to this last question, as to whether or not it is well to plant peaches on level ground, I will say in some sections in this State, those of you know who have traveled through it, we have land not level, decidedly hilly, and so we have laws for observing peach orchards upon level and hilly ground. Cold air runs down hill just like water, and orchards I have been in along the Hudson River, where there is little level ground, you will sometimes find that in certain seasons when we have found winter injury of buds, they extended so far up hill and stopped, and some varieties farther than others, but all showed change of air. I know of one fruit farm of three hundred acres which grows peaches extensively and has great success and very seldom has loss in peach crops. Only one absolute failure in thirty years, and I attribute that largely to their location. On one point touched upon, I should like more definite information, that is the use of spraying for curculio. In our peach orchard where we find curculio we have come to use a machine shaped like an umbrella turned upside down with slot in one side, which they run up to a tree and jar the curculio off and catch them in that way. Some of our most successful peach growers are using it to get ahead of curculios, and we have the impression that spraying is liable to hurt the foliage. We are very careful about spraying peach foliage any more than necessary. We spray for peach curculio before bud opens, and this spraying is done also to prevent peach rot. Last year one-half or two-thirds of our trees were killed by the spraying mixture running down the tree and blighting the whole tree. So you will find on peach trees little twigs all over the trees with dead leaves on end of them. I suppose the spraying with the Bordeaux mixture will prevent that, and I was wondering whether you got any benefit from the use of Paris green. If any of you have had any experience in spraying for curculio or any benefit from the use of Paris green for foliage I should like to hear from you.

Mr. Flick: I do not think Paris green has but little effect on the curculio. I think I prevented the working of curculio and kept them out of the trees by using weak spray of coal oil. During the earlier growth of the leaves I think Paris green has some effect on the curculio, but I think later on it does not.

Professor Troop: My experience in spraying for the curculio is a good deal like Mr. Flick's. Where we spray early, as soon as the buds begin to start, we may catch some of the curculio with Paris green, but never have succeeded in killing curculio with Paris green to any extent after it begins to work on the fruit. Then they attend strictly to business, laying their eggs, and do not eat very much after that time. The object of the insect is to deposit its eggs and after they begin that work I do not think they eat very much, and of course die off as soon as they have accomplished their object. I do not think spraying with Paris green will do much good to catch curculio after they begin their work.

Mr. Thomas: I wish to emphasize all the gentleman said in his paper about planting peaches on elevation. I have not many peach trees, perhaps 100, and this season they bore for the first time. The rows are planted east and west, the west end runs down into level land, and the east end is on high ground, but not more than eight feet difference in elevation. At the east end, the trees were full of nice peaches, while trees in lower ground had scarcely a peach on them, although twice as large as on higher ground. As to pruning, I have been trying to head in and make a flat, spreading top of the tree as much as possible.

Mr. Hobbs: As to the matter of soil, he speaks about poor soil being necessary to highest development of the peach. The soil may be poor in elements that go to produce wheat or corn, but must be rich in elements that go to produce a peach crop. If trees bear good fruit they must have a certain amount of fertility regularly and the soil must not become exhausted. I think Mr. Dean will agree to that.

Mr. Dean: I refer more particularly to corn crops. In our elevated land on the Ohio river hills I presume we have all the elements necessary for peaches, and it has been demonstrated thoroughly in almost every locality. When speaking of rich soil, I refer to farm crops especially. I find other land gives better results in peach growing.

Mr. Lennen: While elevated positions are more favorable and bear fruit when low land is a failure, we ought not to be discouraged in planting, let our situation be whatever it may. My observation is, occasionally there is fruit on the elevated land and not on low, level land, and sometimes fruit along creek bottoms and not fruit on high lands, but as a general thing, when we have a peach crop, it is pretty general to all, on the low and level and elevated lands, and all enjoy that luscious fruit, so I think we ought to plant peaches. I have seen fine peaches grow on low as well as elevated land. In growing peaches in a commercial way, does not the soil become worn out?

Mr. Dean: We have never fertilized our peach trees and ground does wear out. We never repeat an orchard where there has been one before, unless we have planted it in other crops for a few years, but as to using fertilizers on peach orchards, we have never done it, but any soil will become exhausted in bearing many crops.

Mr. Milhouse: Is the cow pea or soy bean beneficial?

Mr. Dean: We have tried at one time turning under clover in one orchard and I think it produced fungus on roots.

Mr. ————: Would you advise stirring soil after fruit is gathered?

Mr. Dean: Not after first of July. A tree has to have time to ripen, especially after bearing a full crop. Would not advocate late cultivation. Sometimes we run the harrow to keep the weeds down, but no cultivation is advisable after fruit commences to ripen.

Mr. Hobbs: "The Plum" will be discussed by Mr. W. W. Phelps, of Noblesville, Ind.

[Abstract.]

W. W. Phelps finds the wild goose plum the most profitable variety and considers Abundance the best of the Japanese varieties. He disposes of that worst enemy to plum growing, the curculio, by feeding young chicks beneath trees. In discussing the treatment of black knot, Prof. S. A. Beach, of New York, stated he had found kerosene an effectual remedy, using it to disinfect the wounds made in removing the knots and also the tools used. J. C. Grossman stated that cherries required richer soil than peaches and deeper planting than most fruit trees. The cherry fruit fly, which has become a serious pest in the eastern States, was reported from the northern part of the State. The insect is of recent appearance and there is no known remedy.—(Clipping from Orange Judd Farmer.)

Mr. Flick: Have you any plums growing near Wild Goose for fertilization?

Mr. Phelps: All of the varieties we have are scattered through the orchard promiscuously, twenty feet apart, insuring perfect fertilization.

Mr. Milhouse: In thinning I would like to know how close the plums ought to be. How many inches apart? Would like some rule to go by.

Mr. Phelps: To thin every sort is a pretty hard job. If thinned properly only just far enough apart so that they would not tough each other.

Mr. Custer: Last season I had Burbank and ten times as many on the tree as necessary, and after half grown or little more, I thinned them out so no two touched each other, and they got to be a good size.

Mr. Hobbs: If they touch soon rotting comes on, and it begins where they touch, and if thinned well it will preserve the vitality of tree.

Mr. Milhouse: I had a Burbank tree this year which was full for all there was in it. I thinned part of the tree to about eight inches and would have had more profitable crop if had picked all over that way and left a plum at every seven or eight inches, they would have brought more money.

Mr. Milton: Is there any other method for controlling rot on Lombard and such varieties of plums except thinning?

Mr. Apple: I prevented rot in Lombards the past season. I commenced spraying before the buds opened with Bordeaux mixture with a little Paris green, and after the bloom fell, every ten days until fruit began to color, and saved a good crop of Lombards.

Mr. Howland: Last year all the Bradshaws rotted. I got just one plum off of four trees, and they were loaded full. This year I watched them closely and sprayed early in the season three times. When they commenced to rot I sprayed very strongly with Bordeaux mixture and saved a splendid crop.

Mr. Thomas: For something like four or five years the Lombards have rotted so they were hardly worth doing anything with. This year I did not spray and had the finest crop of Lombards I have had for years.

Mr. Henby: I have had the same experience with Lombards as Mr. Thomas. Last season I had more Lombards than I knew what to do with. Two years ago all rotted, three years ago all rotted, and I pulled all the rotten ones off and cleaned up everything. A year ago last season I left the rotten ones all on, and concluded it was not worth while to spend any more time on Lombards, and abandoned all hope of having any more to ripen on trees, and last season, I had more than I knew what to do with, and called the neighbors in to pick them on shares.

Mr. Shoemaker: I believe the two gentlemen are attributing their success this year with the Lombard to the wrong thing. There has always been some rot on Robinson, Wild Goose, and particularly on the Burbank and almost all European plums. I find this season scarcely any rot whatever, and attribute it almost entirely to the season. It was a very dry season this year, and the disease or fungi that caused rot did not propagate. Particularly in seasons when it rains heavily and becomes hot afterwards, alternating wet and heated seasons, it is impossible to save plums from rot, especially Lombard and Burbank, and it is my idea that it is on account of the dry season this year that we have had no rot. I have had no rot on any variety to amount to anything this year. I would like to ask something about this bug catcher. Would like to have a special description so I can make it. I do not want to use it on peaches but on plums.

Professor Beach: It is a very simple arrangement. They have a low axle with two wheels and the cloth they use for this umbrella-shaped concern is ordinary common cloth. It has wooden arms like an umbrella to spread it out, and at the center it opens into a tin box, and as they jar the trees they use brooms to wipe down the bugs into the box and then burn them, or otherwise destroy them. I can not give you exact measurement of it. It is known as the Johnson Curculio Catcher, of Geneva, N. Y. We find it necessary to run this bug catcher two weeks and longer. We start in with apricots as soon as the buds begin to swell. I have not full confidence in spraying to control fruit crop fungi under the worst conditions. This gentleman is right in describing the conditions which are favorable. I believe we can help keep matters under control by spraying. Copper sulphate alone seems to injure the foliage and we prefer to use ammonial solution. I do not wish to discourage spraying, but believe we want to get at the truth of the matter, and my impression is we can not always control fruit crop fungi, yet we can help. We always spray our plums for leaf spot. Sometimes in August, just about the time we want the foliage to ripen fruit, the foliage will all fall off and leave the limbs bare. I have in mind one orchard where they did not get the fruit off, and the result was they lost a great many trees the following winter, because they allowed the fruit to ripen when leaves were off. It is something we can not control by spraying, but in spraying you lessen fruit rot fungus. It is easy to spend more time in spraying and in thinning than the fruit is worth. If you are going to thin for size of fruit, you want to begin early. If you wait until the fruit is half-grown you do not get near the benefit you do if you start early.

Mr. Swaim: I would like to say for the benefit of those who have never had experience in catching plum curculio in this way, that it is the early riser that gets the bugs. The plum curculio is much easier caught very early in the morning while it is cool than they are after the sun gets up and warms them up, as they will fly like a potato bug.

Mr. Davis: For the small plum grower who raises a few for his own use, I want to give a receipt that beats anything given yet, as it is very cheap and simple. In the evening about sun-down, when there is no air stirring, build a fire of old chips or something under the tree that will not blaze up, a few old rags and a handful of sulphur, and those fumes will rise up and settle in the tree, and when you shake the tree, every curculio, will drop to the ground. Do this every third evening for a while and you will have a fine crop.

Mr. Shoemaker: I would like to ask a question regarding varieties of plums that grow in this section. It is not necessary to bother about curculio on Wild Goose, Robinson or Pottawattamie, or any native plum

I know anything about. The curculio only helps thin them out. What European plums can we raise in this country that the curculio does not bother?

Professor Beach: I do not want to give information about varieties, but speak of one variety that came from the western nurseries, which in color and shape is something like Wild Goose, but is better in flavor, that is, the Chas. Downing. I would like to get your opinion as to its productiveness. It belongs to the native class.

Mr. Hobbs: It was in cultivation ten or fifteen years ago in parts of the country, and west, but it seems to have dropped out in recent years.

Mr. Howser: The little Blue Damson is the only one I can ever make any money out of. It is not what I regard a fine plum, but they are a great yielder and they will sell.

Mr. Kingsbury: I was just going to ask in regard to that variety, whether they are not also subject to black knot—more so than any other plum?

Mr. Howland: I have been growing it for more than forty years, and I now have some fifty trees of it, and in the forty years I do not think I have gathered wood enough that had black knot on it, that I could not grasp and put in a cook stove. All diseased wood should be burned when cut off. However, I have seen a great deal of it, and know of trees which were loaded down with it, and died because of neglect.

Mr. Custer: I have been growing little Blue Damson for eighteen years, and it proved successful with me. More money in it than any other, and I have never had black knot, except on one tree brought from the other side of Columbus. I cut it off and burned it, and had never had any since. There is little black knot in our part of the State.

Mr. Little: What do you do when it comes on side of a limb?

Mr. Custer: Cut it off and burn it.

Mr. Howser: I never saw but one tree that had knot on it, and that was a peach tree about as large as my arm. Mr. Denny was showing me the orchard and wanted to know what to do with it, and I told him to cut it out with a chisel.

Mr. Custer: In parts of Ohio where I got my trees, they have had black knot so bad that they had to destroy all their trees.

Mr. Hobbs: Professor Beach, what is your experience in cutting knots off level with branch and applying remedies?

Professor Beach: We have used different things, and I suppose nothing better than kerosene oil. It needs something that will kill threads of fungus that have happened to escape cutting. The threads of fungus run all through underneath the bark, and if you leave these, of course, they will grow again and the knot will come out around edges. Other things have been tried, but I do not know of anything that will do more effective work than kerosene. Wipe saw or knife after making a cut, always wipe it with a cloth wet with kerosene, and it will not spread germs from one tree to another. You can arrest the blight in that way.

Mr. Little: I have heard kerosene recommended for knots. I cut the knots out of one tree and used coal oil, and it seemed to feed the knots and they kept growing.

Mr. King: I suspect we were troubled as much with black knot in Wayne County as any place in the State. Many trees around Richmond died with black knot. One gentleman below town, had a large plum orchard, and experimented with different things. He had a mixture he used, and he told our Society about it; quite a number tried it. All we had to do was to cut off the twig, trim them a little on outside and rub on the mixture, and it killed the black knot. I had quite a number of trees that had started black knot. I went home and applied the mixture, and it killed the knot in every instance.

Professor Troop: That was chloro naphtholium. I saw that same orchard near Richmond. The man showed me all through the orchard where black knot had been very bad on branches three and four inches in diameter, and a couple of years before that he had painted them over with chloro naphtholium, and when I was there they were all grown over as nice as could be. I think our crude petroleum will answer the same purpose. I will say that this black knot comes under our law concerning injurious plant diseases, and wherever it is known I require it to be cut out and destroyed. There is a good deal of it in the State.

Mr. Teas: How do you apply it?

Professor Troop: Apply to the knot with a brush. Trim off the knot and paint it over.

Mr. Grossman: There is one variety of plums on which I wish the experience of others, and that is the Wickson. I would like to know if any one has had any experience in fruiting it? It fruited for me for the first time this season, and I was very much pleased with it. It is very large and fancy and nearly every plum on the trees were perfect in every respect. I had always read and seen it mentioned in the horticultural journals that Wickson was very tardy to come into bearing. These were set two years ago last spring, same age as Abundance and Burbank, and yielded equally as heavy. Same color as Japanese, yellowish skin overlaid with red, rather purplish red when fully ripe.

Mr. Reed: The Wickson around St. Louis this year has done exceedingly well. I was talking with several men growing plums quite extensively, and they say Wickson does the best of any Japanese variety there. They are planting it extensively there, but I do not think it does well in this State.

Mr. Custer: How about the Osage plum?

Mr. Henby: I would like to ask the gentleman who read the paper on plums as to his experience with Pottawattami. My experience with it as an ordchard tree is, that it is very short-lived, and not profitable for market on account of its skin being pale red and not attractive. It does not sell well in our market. The tree overbears and bears itself to death in a very few years. We only get two or three crops from it until it dies.

Mr. Phelps: Can not say as to length of life, as my trees are five years old and have borne three crops. I think it is much better than Robinson.

Mr. Shoemaker: The Pottawattamie has been bearing several years for me. They are about nine years old and have been bearing very heavily ever since they had any top at all, and they show no sign so far of dying. They have that fault of bearing very heavily every year, and have never failed. Has any one had any experience with the Winot or Hawkeye in Central Indiana?

Mr. Little: Mr. Hobbs would tell you the Newman plum is the best. I think the Minor is a very good plum.

Mr. Phelps: We have trees of Newman, but they have not borne. One point that is beneficial: cut the limbs out so the sun can strike all part of trees. The native varieties will bear enough so you can cut the tree and make it very thin.

Mr. Dean: I want to hear about the Newman plum.

Mr. Hobbs: We have been fruiting the Newman several years, and like it very much. The tree has rather crooked limbs, and is not very sightly. Bears reasonably young, fruit not quite as large as Wild Goose, very attractive, quality very much better than Robinson or Wild Goose or any other native variety when cooked, less stringent when cooked, and later, ripens after Robinson. I think it is one of our best native plums. Pottawattamie is an enormous producer with us, but our objection is its small size It is not stringent when cooked We have not fruited the Milton.

Mr. Kingsbury: The Satsuma is a Japan plum. The tree is very brittle and liable to break at the least wind.

Mr. Thomas: I have a tree about ten years old of Satsuma, and while it has bloomed five or six years, this is the first year it has borne plums. From one to two dozen matured this year free from worms. It ripens about the first of September.

Mr. Thomas: Mr. Drampt, of Wabash County, raised a great many bushels of Satsuma plums the past year, and they were very fine, not a wormy one.

Mr. Young: I want to ask one word in regard to spraying. Some five years ago I tried to make my own solution from formulas seen in papers, but made a failure, and last year I had a number of plum trees of European varieties, Washington and others, that would rot with me every year. Last spring, early in February, I purchased a compressed air pump and also purchased from the Chemical Company preparations all ready for use, and used them very early on the plums, and also on grapes and peaches. The result was I had first-rate fruit. I sprayed some three times; began about the time the buds commenced swelling, and kept it up. Did not thin the fruit, but saved them from the rot. I made a little test of this kind and had some peaches. Sprayed part of the Bokara, and had one tree very full that I did not spray, but sprayed others near by, and those I sprayed, matured nicely and every peach on the Bokara rotted. Did not spray the Snead, had two nice large trees very full, and they all rotted. I have three sprayers, ————, compressed air and the dust sprayer, and I use the dust made up in form by blue vitriol and the lime preparation; used it on one tree of Imperial Gage, and used the solution on the Washington and on the grapes. Part of the Imperial Gage rotted a little, but the Washington came through all right. My grapes, with but very little exception, Diamond, Niagara and Vergennes, all rotted with me. I used the preparation pretty strong.

Mr. Thomas: I wish to drop one suggestion in regard to rot. We ought to watch our trees and not allow anything to grow on them that is of a diseased nature. Keep every limb and affected part cut out of the tree. I commenced growing grapes thirty years ago and when my vines commenced to get old my grapes rotted badly. I noticed places where I cut off the limbs that the wood had died back and caused dead spots on the branches. I set a new vineyard and decided to raise on new vines. I cut off every three years and raise from new vines, and have not had a rotted grape since. I believe poison sap will be carried like blight in peach, and affect the whole tree.

Mr. Milhouse: We have a little green louse that gets on the under side of the leaf, and as soon as it gets there the leaf turns in and the louse is in the curve or roll, and you may just spray and spray, and the louse works all the same. I was wondering whether burning sulphur under the trees would affect the louse.

Professor Beach: We can not poison these insects by anything like Paris green. They are suckers, and get their living like the mosquito. They get the sap of the leaf or plant from underneath.

Mr. Swaim: I think the secret of controlling the aphis with kerosene emulsion is to take it in time. Watch the trees, and as soon as they come, use emulsion, not wait until leaves are closed up.

Mr. Stine: I sprayed plum trees with everything without doing any good.

Professor Troop: One word in regard to spraying—just this one thing ought to be borne in mind: if you are going to spray at all, spray early, whether for insects or plant diseases, and especially for plant diseases, spray before the disease shows itself. Do not wait until it gets started; then it is hard to check it. Some ask how to get rid of the current worm. It is the easiest thing imaginable. Take it early when it first appears, and sprinkle with white hellebore. In spraying either for insects or plant diseases, do it early, and then one spraying is worth half a dozen later in the season.

Mr. Young: How many times do you advise spraying before the buds open and about when?

Professor Troop: About the time the buds begin to swell.

Mr. Shoemaker: Would you use any arsenic preparation in Bordeaux mixture?

Professor Troop: In spraying for curculio, yes, and if for black knot, no. At that season the curculio hibernates and comes out early in the spring. When it first comes out it eats buds and foliage, and if you are going to get it at all with arsenoids you get it then. Simply use Bordeaux mixture for black knot.

Mr. Hobbs: We will hear next Mr. J. C. Grossman on "The Cherry."

Mr. Grossman: One of the first conditions in growing the cherry will be the selection of a location. If I was going to plant an orchard of cherries I would select an elevated location with a sandy or gravelly and loam soil; it should be reasonably rich. The cherry requires a richer soil than the peach or plum. I would plant deeply, and it would be better yet if we would subsoil where the trees are to be set. The next requisite would be the trees. Secure good two or three year old trees, see that they are carefully trimmed back to two, three or four buds, and then carefully set. A great many fail in setting cherry in not setting deep enough and not compacting the soil about the roots. Cherry trees require setting a little deeper than other trees, and we often make the mistake of not compacting the soil thoroughly. It is my habit, in setting a tree, after the roots are thoroughly covered with fine soil, to get in and thoroughly tramp it with my feet to make it firm, and seldom lose a tree. The after culture would be, clean, thoroughly cultivate up to about first of August. In our section I find nearly all the cherry trees have no fertilizer ever applied to them. We have cherries in favorable seasons, but the majority of them are wormy, knotty and of very inferior size. The culture and high fertilization is the main requisite for successful cherry growing. I might cite the experience with a small orchard I have had. When I had the management of it I gave a thorough cultivation, a few good sprayings, and I have sold bushels, and think customers never have found a wormy cherry. These were mostly Montmorency. Now since the orchard is sodded over and they get no sprayings, we find it difficult to get perfect cherries. They are not as large in size and are very wormy. Another trouble we have to contend with is the rot, especially in a wet season, when nearly half the crop will rot inside of two or three days. We have a home market that will take all the cherries and more than we have been able to supply, but of course they have to be marketed very quickly after picking, and we have to have our customers ready for them before we pick them.

In regard to varieties, I find that the Early Richmond, Montmorency and Late Morellos are the best in our section. May Duke is grown some but it comes very early and the birds get most of them, and we have had trouble in selling them on account of people not being ready to use them at that season. Of course we have not the city market—it would be different. The Late Morello is the English Morello. I find you get more benefit from the discussions, and merely want to open upon the subject.

Mr. Burris: Does Mr. Grossman have trouble with trees sprouting very much after they get considerable size, and what time and how much cultivation is given a good sized tree?

Mr. Grossman: My experience has been limited. These trees were young when I had charge of them, and are twelve years old now. A few of them are sprouting around the bottom now.

Mr. Hobbs: If the cherry is on Mahaleb stock, they will not sprout. They will sprout around the collar, but not away from the tree. When planted deep so that roots from the bud from the variety you are growing form, then you will be troubled with surface sprouts.

Mr. Henby: My experience is somewhat limited, although I have paid considerable attention to the growth and habit of the cherry. My experience with the cherry is in planting in first place, that while ninety-nine per cent. one year old trees planted in the nursery row or in the orchard will live, that forty per cent. two and three year olds, under the same conditions, will die. Further, it is a tree that ought not to be planted deep. We plant it shallow. He recommended sandy and tolerably low land. That we can not all have, but in a clay soil, I think shallow planting is the best for the cherry, as it is not naturally a deep rooter, and it makes a hardier and longer lived tree, and you also avoid danger of sprouting when planted shallow. The cultivated stock, that is, if planted deep, will sprout from the roots and in a short time you will have a thicket of cherry sprouts. The Mahaleb does not sprout from its own root.

Mr. Custer: Some twenty-five or thirty years ago I set out an orchard of one hundred and fifty trees, most on Mahaleb stock, and as long as they were on Mahaleb stock they did not send up any sprouts, but some were set deep and on their own roots, and what I have now are nearly all on their own roots. I think they are much healthier and longer lived than on Mahaleb stock. Nearly all the Mahalebs have passed away long ago.

Mr. Campbell: My experience in setting trees is limited, but I seldom fail in having a tree to grow if I set it myself, with the exception of the cherry tree; I can not get them to grow, about half of them die. I have laid the blame on the nurserymen. Every cherry tree I have ever bought from the nursery the roots have been terribly mutilated. Why do nurserymen mutilate the roots when taking up these trees more so than any other trees? Will some nurseryman present tell me why they do so?

Mr. Hobbs: Mr. Campbell does not approve of the method of pruning, where they take all the roots off and start with main cuttings.

Mr. Campbell: In setting cherry trees I have always aimed to set them about as they were in the nursery. Whether I am right in that I do not know.

Mr. Hobbs: My observation and experience in handling and transplanting the cherry is that it is the most sensitive tree that I know, after buds of the cherry have expanded. If planted when dormant, and in good condition every one ought to grow. I think Mr. Henby has well said that you will succeed in getting a better stand in planting one year old trees.

Mr. Shoemaker: What is the Mahaleb and Myrobolan and what varieties are grafted on Myrobolan and Mahaleb? What is the rule?

Mr. Hobbs: Myrobolan plum stock is a native of Persia and it is one of the varieties of plum that does not sprout from the root. Little tender here, that is, trees are not as hardy as ordinary varities of plums in regard to cold winter killing. It makes a pretty good stock for working plum on, that is, for European and native varieties, and Japans take fairly well to this stock, but on account of the fact that it does not sprout from the roots, it makes a very desirable stock to work plum on. Mahaleb stock came from Persia orignally and is a little more tender than our common cultivated varieties of cherries. Trees when young and thrifty will not stand as much cold as Montmorency. It is used for working Morello almost exclusively. Sweet cherries used principally on Mazzard stock. Mazzard and Mahaleb are varities of plum.

Mr. Swaim: This last year I had a discouraging experience with my English Morello cherries. There was a very small worm affected them, a maggot. There was little or no sign of anything wrong until you opened the cherry. I would like to know what remedy there is, if any, for that. They work in them when nearly ripe.

Professor Troop: I do not know what it can be unless it is plum curculio. Plum curculio is the one that usually makes wormy cherries. I do not think of any other that I have had any experience with.

Professor Beach: I am sorry to say we have that trouble and it is just now most serious to cherry growing in New York State. One of the most extensive cherry orchards near Geneva, of Montmorency and Morello, the fruit was not touched this year at all on account of this trouble. The insect is the larva of a fly and the fly punctures the skin of the fruit as it ripens and pushes its egg into the fruit, and as the gentleman has said, the fruit may show on the outside no sign of being wormy at all but it is full of little maggots or fruit flies. We have had it only about three years and know of no remedy for it.

Mr. Stout: I have been bothered with that in English Morello for three or four years. Two years ago I sprayed with strong solution of Paris green when near full bloom, and that year the fruit was fair, but I diminished the yield by spraying at that time, this year we had a good crop without spraying.

Mrs. Royer: For two years we were troubled with that, sometimes there would be as high as three in a cherry, very small. In all our crop of cherries we did not get scarcely a cherry that was fit to use. This year I sprayed them about the time they were as large as a small pea with a pretty strong Bordeaux mixture and that stayed on them all summer. This year we had scarcely a wormy cherry, and we had an abundance of them. Never had any more on the tree than we had this year, and they were of a very fine quality. Whether the spraying did it or not I do not know.

Mr. Swaim: Spraying did not prevent it in my case, as I used Bordeaux pretty strong.

Professor Beach: The insect does not deposit the egg until fruit is ripening. I can not see how we can avoid the attacks of this fruit fly by spraying because it is a fly that alights on the fruit when it is ripening and punctures the skin. The early ripening cherries are attacked as well as late. I can not tell you whether there is a difference in varieties. They are bad on English Morello.

Mr. Henby: The Montmorency, which is a medium late cherry, is more free from this insect than any other cherry we grow. We grow early May, Montmorency and English Morello. We had better success with our Montmorency than any other sour cherry we grow, freer from attack of this insect.

Mr. Kingsbury: There is a pest called rigolosus that is very troublesome in boring into the limbs of cherry trees, especially small limbs, and causing sap to ooze out in the form of gum. On some of my trees, last summer, the gum would extend from the joint where the limb joins the tree to a yard or more up towards the end, but did not seem to affect maturing fruit very much. Does it not do that sometimes and kill trees, and is there not some remedy?

Professor Troop: It will kill trees, and has killed a great many. It does not confine itself to the cherry, you will find it in nearly all the fruit trees. Perhaps apple is as free as any of our cultivated trees, but cherry, plum and peach are especially suited to it. In these fruits where the gum exudes where bark is injured, it is a difficult matter to do very much with it. A little beetle about as big as a pin-head bores holes through the bark, the female lays an egg in the hole and the larva feeds on the inner bark and sap wood. If enough of them are there, in time they will cut off circulation completely and kill the whole tree. Where gum does not exude I have succeeded in stopping them by using strong kerosene emulsion with force pump early in the season when they first begin to start. Use a solid stream or coarse spray. If the tree is badly infested it ought to be cut down and burned.

Mr. Hobbs: Where whale oil soap is kept on trees, they are not nearly as badly infested as when not sprayed with some sort of soap mixture.

Mr. Tilson: For two years I had four trees of these cherries. The worms were in them so bad we could not use them, and I tried spraying them with all the spraying stuff I could read about, but did not do any good. Last year I got a moth trap and set it under the trees, and kept it there, and this year I did not find a worm in any of these cherries. I caught everything, from the pumpkin bug down to the mosquito, by the thousands. One morning I took out over half a bushel of these black bugs that lay eggs for the grub worm. I got everything. I am going to light the trap and set it early in the spring again.

Mr. Flick: I have heard of this cherry worm this year in three parts of the State, in the eastern part especially, where it had done considerable damage. One gentleman said next year he was going to prevent the fly from getting at his fruit by putting mosquito netting over the top of the tree. Those who tried spraying had not succeeded in preventing the fruit from being injured.

Mr. Swaim: Is it not possible in Mr. Tilson's case that the fumes of the burning kerosene had as much to do as the moth trap?

Professor Troop: I do not want this moth catcher business to go on record as it is left now, because some of you may go home and send for a moth catcher next spring. I have had it for two years, have had it in cherry trees, and in apple trees for the codling moth, and as Mr. Tilson says, we did catch lots of insects, some beetles, a few cut worm moth, lots of beneficial insects. We did not catch a single codling moth, and did not catch a single curculio. We caught a greater number of beneficial insects than any other. I think we did more harm than good with these moth catchers by catching more beneficial insects than injurious ones. A great many have tried moth catchers, and they get an unlimited number of insects, and they jump to the conclusion that it is a great thing, but they do not know what they are catching.

Mr. Henby: I see that the moth catcher has failed to catch the Professor.

Mr. Henry: I want to remark that the season had a great deal to do with this gentleman's spraying material and Mr. Tilson's bug catcher. I believe this is the best season we have had with reference to good fruit without spraying. I have quite a number of Alexander peaches, have sprayed them several times and had a fine lot of remarkable peaches. I have a number of plum trees, and have sprayed several years, this year did not spray at all, and had fine plums, so I think the season had a great deal to do with it.

President Hobbs: We will now hear Mr. Flick on "Lessons from the Orchard in Seasons of Drought."

LESSONS FROM THE ORCHARD IN SEASONS OF DROUGHT.

W. B. FLICK, LAWRENCE.

All those who depend for a livelihood on the cultivation of the soil have learned one great lesson, and that is, how helpless is man when contending against the elements. He seems to be the creature of circumstances, largely depending on the weather. He may manure, prepare the soil, plant and cultivate to the highest degree of perfection, and still, unless favorable conditions of weather accompany his efforts, his crops are failures. God gives the increase. I do not want to be understood as discouraging man's efforts or advocating a do-nothing policy in the face of these calamities. I believe that much can be done to lessen the effects of extreme weather conditions. But we have much to learn. The drought of last summer was the most intense if not the longest in duration that we have had here. Never before have I seen the leaves scorched as during this period. Two pear trees on my grounds looked as if a hot flame had played through their branches. The leaves turned black and crumbled into dust between the fingers. Also some grape vines were similarly affected. All these, after rains come, put out new foliage. The effect on some trees was not noticeable at all. They were green and glossy throughout the summer. Some were found on ridges of rolling land and others in hollows. Some were in the cultivated orchards, while others grew in the grass. So that elevation or cultivation, I judge, have nothing to do with the difference in effect; but I think that on account of favorable conditions the root system of some trees went deeper down than others, thereby enabling them to draw moisture from the deeper subsoil. In orchards which came under my observation the fruit began early to drop and continued so throughout the season. This fallen fruit was not caused by the codling worm altogether, for no markings were found on them until about the middle of August, and therefore we concluded that it was mostly caused by the drought.

At picking time from one-half to two-thirds of the fruit had fallen, but the remaining specimens were large, smooth and highly colored—effect of thinning. It will pay to thin apples, it seems, especially so in dry seasons. I have found it so in peaches, plums and pears, and am convinced by this season's lesson that it will pay with apples. The effect of the drought on the foliage of unsprayed trees was noticeable in that the leaves fell early, while the sprayed trees retained their foliage until heavy frost. The growth of most trees was meager.

How to most effectually prevent the effect of drought is an open question with me. With small fruits—berries and bush fruits—there is some chance for irrigation, even here in parts of our State, and at a profit; but with the orchard it is hardly practicable.

The most that can be done is to keep the orchard in a healthy condition. Give the trees plenty of plant food, keep the foliage and the wood free from disease and injurious insects, encourage the root system to go deep into the soil by underdraining and cultivation and do not allow the trees to overbear.

Mr. Burris: It sems to me Mr. Flick has pretty well covered the ground as to conditions existing during the past year, and they are not unlike those of my own experience, and a few things I noticed in the past year I have not noticed in previous years in regard to fruit. Early varieties of fruits it seemed to me were much longer ripening than any previous year. Chenango and Maiden Blush apples seemed to extend the period of ripening nearly two weeks, and another thing occurred, rotting of earlier ripening peaches which does not usually occur during dry weather so much as during heated, moist weather. No unusual conditions with other fruit excepting Elberta peaches. Other fruit ripened very well except Elbertas, they were much more sour than usual. My orchard is of twenty years' growth, and is cultivated only occasionally. It was cultivated year before last slightly, and sown to rye and clover and in winter pastured with pigs. Cold damp weather caused dropping of fruit so there was not an enormous crop of apples by any means. As long as I have had a larger crop than many of my neighbors I thought myself fortunate in that direction.

Mr. Swaim: Mr. Burris stated that Mr. Flick had covered the ground and he proceeded to cover it over again and I am expected to get out of the discusion what is left. There is one point which they did not touch on however. That has been a very severe lesson to a great many the past season. The conditions with us all throughout the State has been very much the same in regard to the drought. That is the drought affecting newly set trees. My observation has been that where they were not given the very best of care and cultivation or mulched thoroughly, newly set trees have made but very little growth, and a great many have died. That is serious to one starting an orchard because a good start in life is worth as much to the tree as it is to the man. The effect on the growing fruit has been given correctly. The fruit failed to mature as it promised. I think where the orchards were not cared for it was worse than where they were. It affected the fruit worse. I know it did in my own orchard.

Professor Troop: When I put this on the program I had in mind a statement that I heard somebody make—I think he is in the audience or was this afternoon that he did not care whether it rained from the time he planted corn until he harvested it, he could raise a good crop of corn all the same. I wondered if he could do that with corn if we could not do it with fruit. Here is one point that comes in here in the thinning of fruit in a dry season such as we have had in the past year. Is it not especially desirable to thin fruit especially where trees are heavily loaded? Maturing fruit requires an immense amount of water, and especially such a season as we have had the fruit ought to be thinned. There are some thoughts along that line I would like to hear discussed.

Mr. Howell: I have three small orchards, two of them just in bearing, one been bearing for several years. Four years ago last spring the oldest of the orchards I plowed and planted to corn and never since then have the trees done any good. Trees have been planted twenty years. Before plowed they bore abundantly. I did not spray. I think plowing disturbed the roots to such an extent that it has never been worth anything. In the other orchard I have done no plowing at all. When an orchard is left several years without any cultivation the roots came close to surface, and it is dangerous to plow deep. I plowed six inches deep.

Mr. Little: It looks reasonable that if you cultivate an orchard you will have fruit, but after it has stood without cultivation for some time I believe it is better to leave it as it is than to plow it up.

Professor Beach: There is no question about peaches. I believe if anyone expects to do anything with peaches, he should cultivate thoroughly. Also large plum orchards. It is pretty safe to follow the experience of the men who are doing the work. In regard to apple orchards, however, we strike a little different condition of affairs, for the reason that the apple in New York State is grown very largely upon farms where the apple orchard is but part of the farm. The old idea we got from our forefathers was to use it as a pasture as much as possible, and if we got a crop of apples we were so much ahead; but since spraying has come into use so that we can control enemies to the apple crops more than we used to, we can insure to a greater extent a good crop, and are not so much at the mercy of the moth. You know our best apple growers all practice the cultivating of apple orchards. There is still some difference of opinion in regard to it, but sentiment seems to be growing very rapidly in apple sections of the State in favor of cultivation, not that we get so highly colored fruit, because we do not, nor that it keeps so well, because it does not, but we get it more regularly and more abundantly than where the orchard is pastured by sheep or in the usual way. Orchards that I am speaking of now were orchards planted along about 1860 to 1865. I have in mind just at this moment the belt of apple country extending along the south shore of Lake Ontario and back of that, including some of the best apple growing country. Two years ago I was driving through a township where they ship 275,000 barrels of apples from one station. Sentiment through that section is for cultivation. Another orchard I visited this year, south of Syracuse, in different soil, on the northern slope of rather a high hill on which the shale crops out, there is an orchard of 1,200 trees. Mr. Hitchens', who is working out the problem that he had to contend with according to his own condition, goes right in the face of all the public advice given, and is keeping the orchard in sod. He does not trim a tree when he sets it, but sets it just as it comes from the nursery—digs a hole in the sod and plants without trimming. Trees are young, although he has in one corner, trees one hundred years old, and they had a good crop of fruit, Baldwin, Greening and some old-time favorites. He mulches about six inches deep and does not cultivate. Mows with mowing machine and rakes the stuff up and puts it around the trees, spreading it out, and he is getting wonderful results. He had Northern Spy trees six and seven years old with good crops of fruit. Has trees planted eleven years that have borne every year for the last five years. He has 1,200 trees, but some are not in bearing yet. He sold $1,200 worth of fruit. I believe fruit will become higher colored in sod. Mr. Hitchens is located on northern slope. His method would not apply throughout Western New York. I would advise very shallow plowing at first in an old orchard, and working the surface. I believe for most of our people, cultivation will give more fruit year after year than without. Northern Spy on cultivated land, the same tree set at the same time, the fruit will not be as highly colored as on sod. Professor Caul has been studying when the fruit buds are formed. He takes the buds all along during the summer and makes microscopic investigation of them to see when the blossom buds start for next year's crop. With the apple as early as the first of July he gets the first signs of development of the fruit bud during the season. It seems we can theorize from that that if the fruit bud is forming the latter part of June, and then develops through August, it is wise to keep the tree in good growing condition. That is the way I account for more fruit under cultivation, because we keep a good supply of plant food there to fill up those buds during the growing season.

Mr. Stevens: What kind of sod is in this orchard, and is there any artificial fertilization, or are the trees cultivated around them?

Professor Beach: No, they keep enough mulch there to nearly kill out sod. The sod is ordinary June grass, Kentucky blue grass, anything that will grow there. They keep the mulch around them and as the tree grows larger they spread the mulch to suit. They are now trying to grow mulch on other parts of the farm. On some trees they used coarse manure, but not very much.

Mr. Shoemaker: How far apart are the trees?

Professor Beach: On the slope you will find little ridges, and he likes to put the trees in the hollows as much as possible, as there is more moisture and he will get the benefit of it. He runs the rows at a certain distance apart parallel with the side of the hill; perhaps twenty or twenty-four feet apart. He does not grow the trees closely. He is original. I can not tell you the number of trees in bearing, but it is surprising to see how he has the land covered with trees eleven years old that will bring in so much money.

Mr. Stevens: Do you think it would be advisable to grow pear orchards as you would an apple orchard in this way?

Professor Beach: When you come to the question of cultivating the pear, not taking into consideration the effect it may have on blight, I believe as we get a better grade of corn by cultivating, so we get a better grade of fruit by cultivating. I do not mean by cultivating that we are not to do it the right way. We can do injury by going into the orchard and breaking roots too much, but the kind of cultivating I had in mind then, was keeping the surface broken for two or three inches so as to prevent evaporation of moisture from the soil. Mulching is not as cheap. I believe the cheapest way of mulching would be the dust mulch.

Mr. Little: In regard to early bearing of trees, it is not generally understood that trees like Northern Spy, that cluster up in growing, will come much earlier into bearing when not pruned as when pruned out. If you thin out the head of the tree you simply force the growth on the extremity of the tree.

Mr. Shoemaker: What about the methods of cultivating orchard? The general method here is with two-horse plow, which is dangerous to the roots and bodies of trees, and I would like to hear how you start cultivation in the spring. It is easy to cultivate two inches deep with a spring-tooth harrow, but how do you start it to get it in shape to use spring-tooth harrow?

Professor Beach: If the sod is not too heavy you can turn it under more rapidly with a gang plow. The gang plow is an orchard plow made with small plows set one following another. The question of use of tools is one which varies according to soil. If you have a mellow. loam soil, use tools for clay soil. Our soil has a tendency to clay, and we plow with a gang plow and follow with a harrow or cut-away, our object being, after we turn under the growth left over, to keep the surface mellow.

Mr. Hobbs: What is the best winter protection?

Professor Beach: With peaches there is a tendency towards something that will die in winter, like oats or buckwheat. I use buckwheat a great deal. I have mixed buckwheat and Canada peas, and I always find mellow soil after buckwheat. Crimson clover makes an excellent fall growth. Some seasons the growth is too small. The advantage you have with the Canada peas or buckwheat is a larger growth. I have used quite a good deal of winter rye, and that makes a good growth. I usually sow a clover crop first of August. My intention is to keep the surface level during the season. I like to throw the furrows towards the trees.

Mr. ———————: Do you plow around each row or do you throw dirt to one row and away from another?

Professor Beach: I plow towards the tree on both sides of the tree and throw furrows towards the tree, and in spring throw it back. In the fall plow the latter part of October or November to keep the surface water away from trees. I do not plow the whole surface.

Mr. Flick: We always cultivate young trees until they begin to bear, then I would continue according to circumstances, as Professor Beach has said, work out your own problem from experience with what you have to deal with. The different parts of the State, different locations of orchards, different soils, etc., require different treatment.

Mr. Barr: In regard to cultivation, I have found the disc harrow one of the best things I have ever used. I have never used what is called the weeder and such things as that, but in place of breaking my ground with a breaking plow, I use a disc harrow and cut the orchard one way as close to the tree as I can with disc harrow, and in two weeks cut it the other way with my disc harrow, and in this way I catch almost all the surface and work it with the disc harrow. After that I simply use a harrow; a spring-tooth harrow is very good. I do not believe in cultivating very deep. One reason for using a disc harrow, if you strike a root, instead of going around it, your harrow will climb right over it, and you never cut a root of very much size with a disc harrow. After I cut the ground both ways I use a common harrow for the balance of the cultivation.

Mr. Garretson: In regard to mulching, I have practiced mulching with a few trees, and this year I found I had an abundance of apple tree plant lice under these trees, and wondered if that was the cause. Where I cultivated there was not one-fourth as much root aphis and plant louse.

Mr. Hobbs: One objection to use of mulch is that it induces root rot. Whether true or not remains to be proven. Mr. Burton has thought possibly he might have introduced root rot in this way, and he has suffered very much from it. Of course mulch induces roots to form near the surface of the ground. If you commence mulching you have to keep it up.

EVENING SESSION.

Thursday, December 5, 7:30 P. M.

Mr. Hobbs: We will now have the pleasure of listening to a paper by Prof. Wm. Stuart, of Purdue University.

AGRICULTURAL FAIRS AS EDUCATORS—SOME SUGGESTIONS FOR IMPROVEMENT.

BY WILLIAM STUART.

That our agricultural fairs should be educative I think none will deny. It is probably fair to assert that the majority of those who attend the fairs do so for the purpose of acquiring information along lines in which they are interested. Should they be breeders of fine animals, the live stock barns and show ring will naturally attract them. The horticulturist will be attracted by the fruit and vegetable displays, etc.

The amount of information to be derived from an agricultural fair depends largely upon two factors, the quality of the exhibits and the intelligence displayed in their arrangement. With reference to the first factor, quality, no exhibit should be made unless it represented some advance over the ordinary average product of the farm, home or factory. All exhibits should be properly named and products of the same kind grouped together. In this way those wishing to study the exhibit of a certain product may do so in much less time and to much better advantage. The suggestions for the improvement of the agricultural fairs that I am about to make are wholly along the lines I have just mentioned. They were brought to my attention last fall when, as a visitor at both county and State fair, I attempted to make a study of a certain class of exhibits in which I was particularly interested. It is hardly necessary for me to say that they were horticultural exhibits. At the county fair I did not find above half a dozen exhibits of either fruit or vegetables that were named; in fact, there was little to indicate what the exhibit was. If one found certain exhibits of merit there, unless he was able to identify the variety of fruit or vegetable, the information that exhibit conveyed was of little practical value. Hence, from an educational standpoint, it was a failure.

While this example may not be a true picture of the average county fair, it nevertheless illustrates the need of greater care in making exhibits. At the State fair, as one would naturally expect, the exhibits were found to be much more generally named. This was especially true of the fruit exhibits, in which no awards are made except in the case of seedling varieties, to any plates not correctly named. In the vegetable department, however, it would seem to the writer that there is still ample room for improvement. In too many instances it was found that exhibits were not named. As an illustration of this a few examples are cited from last year's premium list: "Twelve best cucumbers," "Six cauliflowers," "Twelve ears early sweet corn," "Twelve ears late sweet corn," "Half peck garden peas (dry)," "Best peck purple tomatoes," "Best peck red tomatoes," "Six largest and best nutmeg melons," "Six largest and best muskmelons," "Six carrots for table use," "Six carrots for live stock," etc. The above examples, selected at random from the premium list, it seems to me, furnish sufficient evidence that these exhibits, while they may be of the best, are not educative, in the highest sense at least, because the varieties exhibited are not named. To remedy this defect does not necessarily mean any material increase in the premium list; nor, for that matter, any great change in it. Supposing that instead of saying "Twelve best cucumbers" it said "Twelve best cucumbers, any variety, properly named;" or, if desired, it might be included in the rules that all exhibits should be named, in which case it would read, "Twelve best cucumbers, any variety." We can readily see how much more instructive an exhibit would be to all, and especially to one desirous of increasing his stock of knowledge along these lines. It would be more than likely that a number of different varieties would be competing for the same premium and in this way one would be able to judge of the good and bad qualities of each.

Another matter to which I wish to call your attention is that of the arrangement of the exhibits. Under the present system of management each exhibitor, at least in the vegetable department, stages his exhibit of possibly two or more dozen varieties or kinds of vegetables in a certain bench space which has been allotted to him. In this way exhibits of the same class of vegetables are scattered all over the hall among the collective exhibits of the different individual exhibitors. As a result, if one wishes to study the exhibit in any particular class of vegetables he has to wander all over the building in order to do it, or else he has to wait at the judge's table while they are being judged, which is not always feasible to do. To remedy this defect I would suggest that each class of exhibits be staged together, even though it might necessitate some changes in the interior arrangement of the hall. With such a system of arranging exhibits, the displays would be not only more attractive, but they would also be much more instructive.

In regard to the display of fruits there is little to be desired. All exhibits, other than seedlings, are required to be properly named in order to compete for a premium. In the individual plate exhibits the varieties are grouped together, readily permitting one to make a fairly careful study of the individual and collective exhibits. It, however, occurs to me that in the case of apples and pears if it were possible to divide the individual plate exhibits of varieties into sections, putting all early or summer fruits into one section, fall fruits in another, and the winter fruits in a third section, having each section properly placarded, it would add not a little to the instructiveness of the exhibit as a whole. I am well aware that this would involve considerable work on the part of the superintendent of this department and that in a number of instances our textbooks could not be strictly adhered to, otherwise we would have summer fruits in the fall section, and fall fruits in the winter section. I believe, however, that on the whole such an arrangement would prove a very desirable one, and would not only be greatly appreciated by the general public, but would be very instructive as well. I might also suggest that narrower tables would permit of a closer inspection of the fruit.

To those who are interested in the exhibits of plants and cut flowers it is often disappointing to find a handsome plant without a label bearing its proper name, or a handsome vase of roses or carnations without a name. While to some these may appear to be matters of small importance, yet to others they are of prime interest.

Having considered some of what appear to be the salient features which might be improved, our next consideration is how may these changes be brought about. I believe that it lies with this society to take the initiative in the matter. I would urge that we take it under consideration and after having formulated such resolutions as we deem wisest and best, submit them to the officers of the State Board of Agriculture, and also to those of our county agricultural societies. In this way the attention of these officers would be called to the fact that there is a demand on the part of the members of this society that the "agricultural fair" be made as instructive as possible to the general public.

DISCUSSION.

Mr. Burton: I believe Professor Stuart's criticism on the exhibits were not of the Horticultural Hall scarcely at all. A few suggestions he offered to our department in the hall could scarcely be applied. We could place apples where they belong, but to exhibit them that way we could only exhibit them on individual plates. It could not apply to the general exhibit.

Professor Stuart: That is what I had in mind. I do not think it could apply to general exhibits.

Mr. Flick: I think his criticism with regard to arrangement of tables is a very good one, as those who are familiar with the tables for exhibition know that some of the fruit is so that no one can examine it very closely, only that near the edge. The tables are six or eight feet wide, and fruit in the center of the table can not be examined, or names read.

Last year we had large cards with names that could be seen from each side. It seems to me the exhibit tables and shelves around the hall might be much improved. I am glad that this has come up, and I hope the Society will do what it can to have these things improved. I would like to see more light and ventilation in our hall. Sometimes there is too much light and sometimes scarcely light enough to distinguish varieties of fruit.

Mr. Hobbs: In the matter of naming fruits, it has been the practice of this Society to appoint a committee that should precede the expert judge, correctly naming the varieties as they understood them; this has facilitated work very much and increased the value of the exhibit from an educational standpoint. The past season this Society did not appoint a committee, and there were a great many improperly named varieties on exhibition. I am not sure but that this Society ought to see that the expenses are paid and the matter attended to. The State Board ought to look after this properly on its own account, but if it does not, it is to the interest of the Horticultural Society to look after that matter.

Mr. Tilson: I have thought several times that this idea of naming the articles, especially in the agricultural, horticultural and vegetable halls ought to be done. At the State Fair there are thirty or forty premiums given on potatoes. When we go to see those potatoes we want to know what they are. If you ask the exhibitor, very often he can't tell you or give you the right name. It is the same way with squashes. I wanted to get a certain variety and could not find it. The name of every squash, new or old, ought to be put on it, so all can see it. Names ought to be on pumpkins, squashes and potatoes especially. With corn it does not make so much difference. The boys of Johnson County make the biggest show of corn in this country, and it is always the same old corn. There are new varieties of fruit coming on all the time, and I am decidedly in favor of presenting some kind of resolution to the State Board because they usually think we have not control or jurisdiction perhaps of anything except fruit and apples. We as a State Horticultural Society have entirely ignored that. We ought to pay more attention to it.

Mr. Stevens: I think we are all of this opinion, and in order that we may have this matter properly arranged at next State Fair, I move you the President and Secretary take this matter in hand and meet with and confer with the State Board of Agriculture at the February meeting when they arrange a premium list, and carry out the suggestions of the Society on this line. I think we all know the importance of having these things named as a matter of education, and I think the State Board would be glad to adopt any suggestions from this Society, and for that reason I make motion that the President and Secretary take this matter in hand.

Motion seconded by Mr. Swaim.

Mr. Burton: It seems to me Professor Stuart ought to be on this, as he was the author of it. Include him with the President and Secretary.

Professor Troop: I have been wondering, if the vegetable belongs to horticulture, why the vegetables, excepting perhaps potatoes, which ought to be classed as field crop, should not to be exhibited in Horticultural Hall instead of in the Agricultural Hall. Why could not we fill up the rest of that hall, as it is never full of fruit; and why could not some vegetables take the place of fakirs that are placed around in different places in Horticultural Hall? It seems to me that it would be very appropriate to have the vegetables in Horticultural Hall, squashes, cucumbers, and those usually classed among vegetables. Perhaps potatoes would be all right in Agricultural Hall, and it seems to me they would be put over there and under charge of the Superintendent of that department.

Mr. Burton: It don't seem to me that the Jonathan ought to be placed with squashes. Do not think it would be proper to put apples and potatoes together.

Mr. Milhouse: I like the idea of naming the vegetables and all the exhibits in the hall. There is one reason, heretofore a good reason, why the exhibitor could not tell what he had on exhibition. I know whereof I speak from the fact I sold some exhibitors stuff to take to the Fair. We have some hucksters, not producers, not gardeners, who have laid up stock for weeks in cold storage preparing for State Fair. They could not tell what a variety is, and I know they have told people what varieties were, that were absolutely false. They had to have some name, and if you did not know any better you had to believe it. I do not know that you could get a fair exhibit unless peddlers should be ruled out and make the grower the exhibitor.

Professor Troop: A few years ago we drew up the present premium list, requiring all exhibits to be shown by grower and I think it is pretty generally observed now. We used to have the same thing in this department at the State Fair as now, in regard to vegetables. Professional exhibitors would come from other States, go down here to commission houses, buy the best fruit they could get, take it up to the State Fair and rake off the premiums. They do not do it any more. If those who have the other matter in charge would pass that kind of rule and enforce it that would settle them.

Mr. Hobbs: We have with us today a gentleman from the State of New York—one who is connected with the experiment station of that

State, and one who is eminently qualified to discuss "The Function of the Experiment Station Horticulturist." I have the pleasure of introducing Prof. S. A. Beach.

THE FUNCTION OF THE STATION HORTICULTURIST.

BY PROF. S. A. BEACH, GENEVA, N. Y.

The agricultural experiment stations in the United States were called into existence for the express purpose of aiding agriculture. The act of Congress which provides for establishing them clearly declares this and directs that it be done by acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture and by promoting scientific investigation and experiment respecting the principles and applications of agricultural science. The term "agriculture" is here used in the broadest sense, meaning any industry practiced in connection with the cultivation of the soil, and therefore includes horticulture.

How is the object for which these stations were established being fulfilled so far as it pertains to horticulture? This is a subject which concerns seedsmen, nurserymen, gardeners, florists, fruit growers and all others who are engaged in horticultural pursuits, whatever the section of country in which they may be located. Such persons should take an interest in this question for two reasons:

First. That they may get as much direct benefit as possible from the Experiment Stations; and

Second. That they may do whatever they can to increase the efficiency of these stations along horticultural lines, and especially of that particular station which is located within their own State. This does not mean that their interest in the stations should be purely selfish. We believe that horticulturists are as ready as any other class of citizens to support a broad and liberal management of all departments in these institutions. Even were they disposed to favor a narrow and strictly selfish policy towards the other lines of work, they could not afford to do so. "There is that scatters, and yet increases; and there is that withholds more than is meet, but it tends to poverty." In a great many ways horticulture receives aid from research and experiment conducted outside of horticultural departments. If we were to consider broadly what has been done, what is being done and what might well be done for horticulture through experiment station effort it would lead to a discussion of many lines of work besides those which are commonly classed as horticultural. Plant physiology and pathology, mycology, bacteriology, physics, chemistry and other important fields of scientific effort often bear tribute to horticulture. While such a theme could not fail to interest a society of horticulturists such as I now have the honor of addressing, an adequate consideration of it would require more than the allotted time. We therefore propose to confine the discussion chiefly to that phase of the relation of experiment stations to horticulture which pertains to the province of the horticultural department or the function of the station horticulturist. In their origin and development in the United States the Agricultural Experiment Stations have been intimately associated with the land grant colleges, often known as "agricultural colleges" but more properly as "colleges of agriculture and mechanic arts." They are in fact a natural and logical outgrowth from this class of colleges. A brief review of their rise may lead to a better appreciation of their present status.

Fifty years ago the young man who went to college for the purpose of training himself for a professional career had the choice of three professions—medicine, law and theology. Those sciences which are most intimately related either to the productive or to the manufacturing industries received comparatively little attention even in the most progressive and best equipped institutions of learning of that day. The remarkable development of the industrial arts in America, the rapid extension and improvement of transportation facilities, the growth of the productive industries attracted in constantly increasing numbers men of intellectual ability. Such men felt the great necessity for some training to fit them for their calling in life other than the classical or so-called liberal education which was all that the existing schools offered. They became impressed with the idea that a knowledge of those sciences which are most closely related to the arts and industries of life would be of immense practical benefit and that in some way young men should be given the opportunity to secure a good training in such kinds of knowledge. So, from various sources, from shops, and factories, and mines, as well as from the farms, there arose a demand for better opportunities for scientific education.

Eventually a few agricultural schools of lower grade than the colleges were started in some of the older States. The first permanent agricultural college was that of Michigan, which opened its doors in 1857. In 1859 both Pennsylvania and Maryland opened schools of agriculture. At this time Senator Morrill was working in Congress to establish by government aid that great system of State agricultural colleges which was to give to the children of American farmers and mechanics in every State and territory of the Union an opportunity to secure a college education and particularly instruction in the sciences underlying agriculture and mechanic arts. The Morrill act providing for the establishment of an agricultural college by Government aid in each State and territory was passed by Congress in 1862, thirty-nine years ago. It appears, therefore, that these colleges form a decidedly modern class of educational institutions.

In their earlier history most of them offered little instruction in horticulture or none at all. In others the horticultural interests were given into the charge of a professor having some other science as his specialty, usually either that of botany or of entomology. In fact, prior to the passing of the Hatch act horticulture had been given a separate department in but very few of the agricultural colleges.

In establishing courses of instruction in agriculture and horticulture, as well as in other ways which might be mentioned, these colleges entered upon new fields of labor. As one after another of the States took advantage of the liberality of the Government and the agricultural colleges began to be organized it was found that there were no available men of college or university education who had been fitted by special training to take head positions either in the departments of agriculture or of horticulture. Men already trained in their respective sciences could be found to take charge of departments in zoology, botany, physics and chemistry, but professors of agriculture or of horticulture must needs be developed. These men, as might naturally be expected, had many difficulties to contend with, many perplexing problems to face, much to learn and also much to unlearn before their departments were brought up to the efficiency which they have now attained. There was practically nothing by way of precedent to guide them either in organizing or equipping their departments, in mapping out their courses of study or in developing or adapting the methods of instruction best suited to their needs. Of specially prepared text-books there were few or none. High grade technical literature was very meager, and much of the ordinary literature was often full of crudities and more or less unscientific and erroneous. Confronted with such difficulties the first horticulturists of the agricultural colleges set about the task of developing their departments at these institutions upon a sound basis and along practical lines. They soon felt the need of greater knowledge of even the very ordinary and simple things pertaining to horticulture. There were conflicting ideas and theories about propagation, cultivation, pruning and various other horticultural practices. It was desirable to get at the fundamental facts and put them on record for the benefit of others; to know the truth and publish it. In agriculture similar needs also soon came to be recognized. There arose, then, a demand on the part of the agricultural colleges for facilities for experiment and research in ways which might be of practical benefit to agriculture and horticulture. They presented their needs to Congress in such a way as to finally secure the passage of the Hatch act in 1887. Thus it appears, as has already been stated, that the experiment stations in the United States are the natural and logical outgrowth of the agricultural colleges.

The Hatch act provides for the establishment of an experiment station under the direction of the agricultural college in each State and territory. Agricultural experiment stations had been in existence in Europe some years before 1887 when this act was passed, the first one having been organized in 1851, in Saxony. Before the Hatch act became a law it had already been demonstrated that when properly conducted such experiment stations render lasting benefit to agriculture by means of scientific investigation. In the United States the first experiment station was organized in Connecticut in 1875. Others soon followed, so that at the close of 1886 there were seventeen of them in this country, most of them being under the direction of an agricultural college and some of them receiving State aid. Under the impetus to the experiment station movement which the Hatch act gave, the number increased from seventeen in 1886 to forty-four by the close of 1888, and most of the earlier ones became reorganized under national authority and were thereby put in position to do more efficient work. It thus appears that while the agricultural colleges are modern institutions, the agricultural experiment stations in this country are even more modern. Less than one-third of those which are now in existence in the United States have been in operation fifteen years and the oldest has been organized but twenty-six years.

Difficulties similar to those which attended the organization and development of the horticultural departments in the agricultural colleges were encountered in starting the work in the experiment stations. The demand for men of special training to take up horticultural work at the colleges and experiment stations was greater than the supply. In many instances the work was assigned to men whose specialty was botany or entomology or some other science. In some cases it was given to practical men who had not received special scientific training. In some places it was given to young men who, although they had been educated in an agricultural college, yet because of their very youth were lacking in that technical knowledge and maturity of judgment which is born of years of experience. In most places the position of station horticulturist was given to the one who had previously been the professor of horticulture in the agricultural college.

The way in which the horticultural work of the experiment stations was administered in 1889, which was shortly after most of them were started, as compared with 1901, is of interest in this connection. There were then forty-four stations, now there are fifty-four. Then there were twenty stations which made no provision for horticulture, now there are but five. Then there were but sixteen stations having a separate department for horticulture, now there are thirty-four. Then horticulture was combined in a department with botany in five stations and with entomology in three stations. Now horticulture is combined in a department with botany in five stations; with botany and entomology in two stations; with entomology in two stations; with biology in two stations; with agriculture in three stations, and with forestry in one station. This comparison makes it apparent that during the last twelve years the provisions for horticultural investigation at the experiment stations have been greatly enlarged.

In considering the question as to how well the stations have been performing their functions the fact should be borne in mind that they have been in existence but few years, and during this time much pioneering has of necessity been done, especially in horticulture. This was naturally to be expected. Difficulties and obstacles peculiar to pioneer conditions beset the work. In spite of these conditions really commendable advances have been made towards accomplishing the end for which the stations were organized. For conformation of this statement consider for a moment one branch only of horticulture, namely that of fruit growing. Mark what changes have been adopted by practical fruit growers during the past twelve years in methods of fighting injurious insects and plant diseases, in use of cover crops and tillage and in other methods of orchard management. Among the agencies by which these new ideas have been brought into common practice the experiment stations must be recognized as having acted a very important part. Other ways in which the stations have been of practical benefit to horticulture might be mentioned, but it is not our purpose at this time to indulge in expressions either of praise or blame. Many mistakes have been made which may be excused on the ground of youth and inexperience. Some good has been accomplished for which we say heartily, "Well done!" But the period of youth is passing away, and with it let there pass also the necessity for excusing youthful errors. The stations have now been established long enough for them to get their bearings and shape their course. Let them inquire more earnestly than ever what functions are most important; what lines of effort promise most valuable results. One of the most important questions which such an inquiry brings up is that of the relation of the experiment station staff to the teaching function of the college or university.

Where the station is under the direction of either an agricultural college or a State university, as most of our experiment stations are, the head of the department of horticultural instruction in the college or university also has charge of the horticultural work of the station. This is not an ideal arrangement. Where the instructor in the college is also the investigator in the experiment station, if either part of the work must be set aside it is natural to expect that the investigation will wait and the instruction receive attention. College classes must be met at an appointed time. To meet them properly requires rigid preparation. Thus in meeting his classes and in planning and preparing for them the thought and energy of the teacher tend strongly towards the instructional side of his allotted work. When a man's thought, energies and ambitions are thoroughly absorbed in the one field of effort it must of necessity unfit him to some degree from excelling in the other. Moreover the type of mind which is found in an excellent instructor is generally quite different from that which is peculiarly adapted to and developed by scientific research and experiment. The man who excels as a farmer is seldom one who succeeds equally well as a dealer in farm products. The experimenter strives to bring forth a product. The teacher deals with the product when it is brought forth. One who can rouse students to enthusiastic pursuit of knowledge is a man of different type from the one who naturally delights in digging at problems and searching for truths with patient zeal that the boundaries of human knowledge may be thereby enlarged.

While it is true that the Hatch act directs them to acquire and disseminate useful information, yet the great object for which these stations exist is not that they may assume the functions of educational institutions, but rather to promote scientific investigation for the benefit of agriculture., Dr. Jordan once said, "An experiment station, chiefly as an instrument of popular instruction, is an absurdity." In highly organized society there is division of labor. Let the colleges chiefly instruct. Let the experiment stations chiefly experiment.

Beyond all doubt the instructional functions have thus far absorbed much more of the time and of the energy of station horticulturists and also of the funds assigned to horticulture in experiment stations than have the functions of research and experiment. It becomes clear that the instructional functions are necessary when we consider the ways in which they are exercised, which are chiefly these:

1. Compiling bulletins which do not set forth results of original investigation, as, for example, bulletins upon such topics of general interest as "How to manage an apple orchard," or "How to grow mushrooms."

2. Replies to inquiries from persons interested in horticultural pursuits. In an important way the station thus serves its constituency in the capacity of a bureau of information upon horticultural matters.

3. Taking part in farmers' institutes or other agricultural or horticultural meetings.

4. Contributing to periodical or other literature.

5. Conducting illustrative experiments, that is, those which are carried on primarily as object lessons. For example, after it has been demonstrated that the mildew of grapes may be controlled by proper use of fungicides, the horticulturist may test the treatment in some grape growing locality, not to discover its value, but to demonstrate to the people the benefits which follow proper treatment and to serve as a text for a popular bulletin on spraying to prevent grape mildew. It has already been shown that the disease may be thus controlled. His object is simply to bring this knowledge to the people and help them to take advantage of it.

While it is conceded that giving instruction in ways like those above mentioned is a legitimate and, in some part, necessary function of the experiment station, yet such efforts should not absorb unduly the energies of the station staff. There is other work to be done. The promotion of scientific investigation is a far more important function because this tends to increase the sum total of human knowledge. By helping to establish fundamental truths it contributes to the permanent prosperity of horticulture. The very name "experiment station" implies that these special institutions were organized chiefly to do such kind of work. We do not underestimate the need for and value of instruction when we insist that the experiment stations have been established to do a special work and in doing that work they exercise their most important functions.

But it is not enough that they investigate and experiment. Different kinds of investigation vary greatly in the value of the results which they give. The demonstrating that potato scab is caused by a fungus parasite, and in finding a practical and efficient means of preventing it, experiment stations have gained knowledge that is worth something to potato growers wherever potato scab is found. In showing that sterilizing the soil by heating it prevents the ravages of certain diseases of lettuce in forcing houses, the stations have discovered something of practical value wherever lettuce is forced. But a test of strawberry varieties results in knowledge of much more restricted application both as to extent of time and of territory. Its application is restricted as to territory because in the next township where different conditions prevail an equally careful test might give different results. It is also restricted as to extent of time in which this knowledge will be of value because the older varieties of strawberries are displaced by newer ones so rapidly that even a strawberry specialist can not keep posted on them all. These illustrations represent well the two classes of investigations referred to. In the one class results are worked for which are limited in application and of temporary value; in the other that knowledge which is sought is of more permanent value and of wider application. Generally results of the former class may be obtained more quickly; those of the latter class may require several years of consecutive experiments upon a single problem. Which kind of work shall the stations do? The decision rests not altogether with the station workers, but also to some extent with the people who are engaged in horticultural industries. The doing of the less important things has heretofore frequently been excused by the station workers with the statement that the people are demanding immediate results. When agricultural and horticultural organizations, either through individual members or by representative officials, show a real and friendly interest by asking the station horticulturist every little while, "Well, what new thing have you accomplished?" and when the same query keeps coming in one form or another from trustees of the college or the board of control of the station, from editors of papers and from various other sources more or less influential, it is not strange if the station worker becomes strongly impressed with the idea that the people demand immediate results and that the more frequently something new can be sent forth the better. Where such an idea controls the station worker the lines of work are not so apt to be selected upon the basis of permanent value as upon the prospects of getting immediate results. I do not believe that the people really desire such choice of work by the stations. If taken into confidence by the station workers and shown clearly the comparative merits of the different lines of investigation I believe they would almost unanimously declare in favor of the policy of directing experiment and research patiently and persistently towards learning those truths which are of most permanent value and widespread application. Then instead of asking "What new thing have you done?" the query would be, "What are you trying to do and how are you trying to do it?" Such an inquiry coming from the practical man to the professional horticulturist at once opens the way to cordial and sympathetic relations between the two and they are then in the best position to help each other and to join in forwarding the interests of horticulture.

If the station horticulturist is to perform most effectively the higher functions he must necessarily be relieved from some of the less important ones. What are some of the less necessary functions? One of them is the managing of the land in the horticultural department according to the model farm or model garden idea. It is no light task to manage a model fruit farm successfully. Probably no one has ever done it without laying awake nights. And when it is done it is a model which others can safely follow only so far as they have similar environment for trees and plants and similar market demands, shipping facilities, available labor at similar prices and a thousand and one other things which must be met and dealt with by each individual according to circumstances and his own taste and preferences.

Governor Hord has said that "You can't expect a successful breeder of Shorthorn cattle from a man with the Jersey idea; nor a successful breeder of Clydesdale or Percheron horses from a man pervaded with the thoroughbred idea." In other words, a man will be most successful in growing what he has a liking for, either natural or acquired. This is as true of fruit growing and gardening as it is of stock raising. Should the station horticulturist succeed in developing a model farm at the experiment station it would be his model and not yours nor mine, and it would be a model for his conditions and not for yours nor mine; and, worst of all, or, rather, best of all, it would be permeated with his likes and dislikes and not yours nor mine.

There is one feature of the instructional work to which the attention of an audience like this may well be called. The station horticulturist is often asked to give particular and detailed directions about how to grow certain things. He is asked what kind of fertilizers to use for a special crop and in what proportions they should be mixed; how and when to cultivate and to plant and to harvest and a host of questions of like character. It is all right to ask these questions, perhaps, but the inquirer must, after all, work out his own problems according to his peculiar conditions. My apple orchard responds but little to applications of potash, but that may not be true of your orchard. There are general principles bearing upon orchard practice which may be given, but the application of those principles must ultimately rest with the man who can study the local conditions on the spot. Dr. Armsby has forcibly said: "The function of the experiment station is not the impossible task of giving him (the farmer) recipes suited to every conceivable emergency. Its business is to enlarge his knowledge of the natural forces which drive his farm as the steam drives the engine, and to teach him to control them instead of being controlled by them. It is not a device to save the farmer the trouble of thinking. On the contrary, its constant and insistent demand is that he think more. It can help him permanently and effectively only to the extent to which he can by such thinking digest and assimilate its help."

The remarks about variety testing, which were made a little while ago, might perhaps be construed as disparaging the testing of varieties by the experiment stations. It is not my purpose to altogether condemn variety testing as a line of station investigation, but rather to raise the question whether other lines of work do not generally promise more lasting and widespread benefit. Variety testing is especially valuable in some sections of the country and within proper limits it is desirable in other localities. In some of the newer parts of the land the great question is not "Which variety will grow?" but "Will any variety grow?" Thus, if a man in Minnesota desires to grow apples, he can not choose the list of varieties that the fruit grower in Indiana may safely select. He needs apples of the grade of hardiness of the Wealthy. So, also, in some parts of Colorado the question is not what kind of pear to grow, but can any pear be grown under the existing conditions. My opinion is that in the older parts of the country, where there is already a good range of standard varieties from which selections may be made, the great need is not so much to learn how well new varieties may succeed, but rather how may the standard sorts be grown and handled more successfully. Isn't it true that we have often tried to overcome mistakes in our ways of doing things by seeking some new variety which would do well in spite of our mistakes? We have read or listened to descriptions of the health and vigor and wonderful productiveness and other desirable, though perhaps impossible qualities, in the new variety and have said to ourselves, "That's just what I need; I'll try some." But insects and disease and thirst and hunger have eventually played havoc with the new variety as they did with the old.

Shall we, then, in the older States give up the search for better things? By no means. There is need of good work in plant breeding, in plant introduction and in variety testing. But we do not need new varieties more than anything else. There are other important lines of work, also. Let us ask, "Which knowledge is worth most? In which field of research and experiment shall the greatest effort be expended?" Then having decided these questions, let the station be encouraged and supported in pursuing its investigations persistently, even if new results can not be announced as frequently as we would desire to have them. Thus understanding each other, believing in and helping each other, the station workers and the people for whom they work will eventually rejoice together in permanent horticultural progress.

Mr. Burton: I am glad Professor Beach has come here and given us such a good paper, and has relieved my mind somewhat about the action of the experiment station. The teacher in these stations is a teacher in experiments. Some things come up in my way in managing the orchard that I thought possibly ought long ago to have been answered by these experiment stations, and I was brought to a standstill until I found these things out myself. The Professor has explained that they are not working along that line, they are teaching what somebody has found out somewhere else, and are getting it in shape to give it to the people. I thank the Professor for the paper and feel more generous toward that class of instructors.

Professor Beach: My desire is that you will all speak your minds freely on this subject. I am willing to take my share of the faults of the experiment station. I know something of the farmers' feeling toward the station. Some do not believe stations are doing what they ought to do. A great many others can not help but feel that stations have been some help in the progress made in agriculture and horticulture. They can be of a great deal more help. The way to correct these things is to first recognize what the work of the experiment station is, and see if we can so adjust matters that we can expect an ordinary man with the special training he is given to do this work for us. They are not men who can do twice the work of ordinary men. I am glad that here in Indiana you are working along that line and have Mr. Stuart in the experiment station who does not have teaching to do and who can sit down and watch his experiments all summer and winter if he wants to, and I think all stations in the United States will come more and more to doing work in that way.

Mr. Zion: I would like to ask a question. I have had some experience in experiment stations. Do not these men qualified in connection with universities, resort to artificial means in the way of soil that is away beyond a practical use to ordinary farm or fruit growing? That has destroyed my confidence more than anything else.

Professor Beach: That opens up to my mind one of the objections I have tried to bring out here today, relying too much upon results which are obtained outside of their own farm. Of course I can not say what other growers and horticulturists have done in their tests. The point is, as said of the strawberry business, Professor Troop or myself may contract for sixty or seventy varieties of strawberries, watch their growth through the season, sit down and make out a list and show which one has done the best with him; yet another man, taking the same list of strawberries on another soil in another locality, might get different results with each variety. Simply recognize that different varieties do differently on different soils. The variety test is of some value as it contributes to our knowledge what that variety will do. The kind of work that is going to do the most good is work of more strictly scientific character. For instance, Professor P—k—r, of Wisconsin, has devised a theory for food in milk. Now he has found something very valuable to milk, the world over, wherever we find milk we can test the food in milk with the Professor's test, and do it quickly. And just the same with treatment of fungus on peach. Every peach sprayed with Bordeaux mixture will insure the crop against that disease and will wherever they grow peaches. In one experiment station now they are studying the red spot in cheese, spending hundreds of dollars trying to find out what makes red spot in cheese. The past year their efforts in that line have given them such results that they can go into a cheese factory and tell cheese men how to avoid having the red spot in cheese. One of the main points I want to make in this paper is the point to determine what work we should do at these stations. Let us determine the kind of knowledge we are expected to get from it and decide which kind of knowledge promises most far-reaching results. Let us set out with our faces in that direction and keep at it until we get results. I believe as I said in the paper that something ought to be done if we expect to keep the stations. There are certain fundamental things that are practical and that have a claim upon our time and knowledge, which we must meet.

Professor Troop: I am very glad Professor Beach has presented this matter to us in the way he has because I have felt that the people generally did not understand, did not appreciate the amount of work that was expected generally of the station horticulturist and professor of holticulture.

Mr. Milhouse: I am glad to hear the paper which has been read this evening. I learned, long ago, that no man can do experimenting altogether for himself. I can get thoughts from experiments conducted at Purdue and I can carry the idea out on my farm at home. After I get all I can out of the experiment station I have to work part of it out myself. I am recognized as a crank in our community. Some experiments I have made were very successful, and in others I got my fingers burned.

Mr. Tilson: I have visited Purdue I suppose oftener than most of you, and am satisfied with their work in the college, and also the work in the experiment station. I am glad they have another to help there, Mr. Stuart, and I want all of those seeds which are sent out by our Congressmen, sent to Purdue and let them experiment on them.

Close of evening session.

MORNING SESSION.

Friday, December 6, 9 A. M.

Mr. Hobbs: Mr. Burton wishes to make a statement.

Mr. Burton: I wish to speak of the matter of an exhibition of our fruits at the St. Louis Exposition. Our western brothers are doing wonderful things in fruit growing, in apple growing, and we fully believe they can not beat us, and we do not want to stand idly by and make no show at this exhibition. I believe we can make the finest display of the most popular apples in the United States—Jonathan, Winesap and Rome Beauty; and we can exhibit quite a number of varieties. I want to suggest that we ought to prepare for this early next season, and take special pains and make a thorough canvass. Perhaps we should have a committee of ninety-two to look after this business, one from each county. I would like to hear from other members on this.

Mr. Garretson: I think he has spoken to the point, and will work my best in my section.

Mr. Burton: The Secretary should be chairman of this committee and make all arrangements for us and provide for apples to go in cold storage as soon as they are ripe enough.

Mr. Flick: I approve of the suggestion to begin in time so as to be ready to gather up the fruit and put in cold storage. I think we can, as he said, make a very creditable show of apples from Indiana, not only the varieties he mentioned but others, and think it proper and right to do so. Our State needs to be more thoroughly advertised as an apple growing region. I believe that we can grow as good and perhaps better apples than either Illinois, Missouri, Kansas, or any other western State, and here is the best and perhaps the only opportunity we will have for many years to make it known.

Mr. Henby: I heartily endorse the proposition, that we are going to have something to do in an undertaking of that kind. Remember we must run up against Missouri, and she is going to put her best foot foremost. I believe she has the best orchards of apples of any State.

Professor Troop: I was at the Pan-American Exposition in September, and am confident if we had had our exhibit that we had at the State Fair this year, set down there just as it was at the State Fair, we could have equaled anything there was on exhibition there at that time. A good deal of the fruit, a good many apples on exhibition, when I was there, were cold storage apples. New York is an apple growing

State, but did not happen to be in it this year, and it may not be Missouri's year two years from now. We ought to begin now and prepare for the St. Louis Exposition, and let people know we can grow apples in Indiana. At every exposition for years there has something come up, either no fruit or no money to do anything with, and we have not been represented, and I think it is time we were represented in some of these expositions.

Mr. Thomas: A year ago last summer Indiana apples took first premium at the Paris Exposition, and we can compete with Missouri and other States by going to work in time, and I am decidedly in favor of going to work and working the matter up, and see if we can not hustle Missouri.

Mr. Campbell: The best way to dispose of this matter is to make a motion, and I move the President appoint a committee of one from each county in the State, as far as he can, to see after this matter. Include the Secretary as chairman of that committee.

Mr. Hobbs: I would suggest that this matter, as it will call for some expenditure of money and involve the Society in a general way, be referred to the Executive Committee, who will have power to act for the Society, and if you will refer this whole matter to the Executive Committee, of which the President and Secretary are a part, it will put it in better shape. If this meets your approval it will satisfy me better.

Mr. Johnson: I heartily agree with all that has been said, and I think the Legislature will be in session between now and that time, and possibly it will do something for us in the way of money, and I am in favor of your suggestion, referring the matter to the Executive Committee or Board of Horticulture.

Mr. Campbell: I accept the amendment to my motion.

The motion and amendment were carried.

Professor Troop: Since I have been here, I have received the medal that was awarded the Society at the Paris Exposition. It was sent by mistake to Mr. Ragan, and he forwarded it to me. We were awarded a gold medal for the interest this Society took in the Paris Exposition, although the apples that were sent were by private individuals.

Mr. Hobbs: Mr. Johnson, our Treasurer, was not with us, and did not make his report as Treasurer in connection with the Secretary's report, as usual. He is with us this morning and will explain his absence yesterday and make his report to the Society.

Mr. Johnson: I have not been notified of this meeting, and I never heard of its occurrence until about an hour ago. Who is to blame I do not know.

TREASURER'S REPORT

Of Receipts and Expenditures for the Year Ending October 31, 1901.

October 31, 1900.	Balance in the treasury	$351 82
October 31, 1901.	Received from Secretary Troop	120 01
October 31, 1901.	Balance due treasurer	13 13
	Total receipts	$484 96

At the same time there was expended as per vouchers Nos. 1 to 29, inclusive, $484.96.

Respectfully submitted,
SYLVESTER JOHNSON,
Treasurer.

The President appointed Mr. Tilson and Mr. Garretson Committee on Finance.

Mr. Stevens reported on President's address.

Moved and carried that the report of committee be concurred in.

Professor Troop: Would it not be well at this time to fix a time for our annual meeting? A few years ago we thought it would be a good plan to change the time of meeting to January at the same time of other meetings which are held then, but we found it did not work well, and since then it has been left to the Executive Committee to fix the time for meeting, and no one knows until the program is out, when we are going to have the annual meeting, and we ought to change the constitution if it needs to be changed, and if not, let's adhere to it.

Mr. Hobbs: I am favorable to a fixed time for holding the meeting. This was a rule for a good many years, but the time for holding the meeting conflicted with that of Michigan and Ohio, and that by holding a little earlier or little later, we might miss their dates and have delegates from their meetings to attend ours; but this matter of fixing date in January and December and at different times seems to unsettle us, as it has Mr. Johnson and many others, and the date should be permanently fixed at some time that will suit the convenience of all. Would like the Society to take this matter up and fix date that we can adhere to in the future.

Mr. Johnson: The matter ought to be done right now. It was left to the Executive Committee a year ago. I am told they met and decided to have the meeting at this date instead of the time the constitution fixes —first Wednesday after first Monday in January.

Mr. Hobbs: You remember we made this change when we made an effort to accommodate members on lower rates in getting to city. We passed to hold it during the week when other agricultural societies met here in the city in connection with the State Board, and found a difficulty in getting a convenient place to meet. I think that early in December suits most of our people better than any other time.

Mr. Flick: I would move that section 8 of the by-laws be so amended as to read the "first Wednesday after the first Monday in December." It now reads January.

Mr. Swaim: I support the motion.

Motion carried, and the by-laws were so changed.

Mr. Hobbs: We will now have a report from Mr. Burton, Superintendent of the Experimental Orchard.

REPORT ON EXPERIMENTAL ORCHARD.

BY THE SUPERINTENDENT, JOE A. BURTON.

The growth of trees in both variety and top worker plots have been good. The seedlings were much retarded by the repeated attacks of the leaf roller. They are now set in rows nine feet wide by three to four feet in row.

There are seedlings from Grimes	50
There are seedlings from Ben Davis	166
There are seedlings from Salome	14
There are seedlings from Rome Beauty	139
There are seedlings from Winesap	444
There are seedlings from Winesap and Grimes mixed	92
There are seedlings from Kansas Keeper	50
There are seedlings from Mann	14

The following seedlings have been top worked:

Winesap	11
Grimes	2
Salome	2
Rome Beauty	10
Ben Davis	10
Genet pollenized by Ben Davis	3
Total number of seedlings	1,007

Lost in top working:

Winesap	6
Rome Beauty	3
Ben Davis	2

The cause of loss was bad grafting wax. On account of the high price of beeswax we substituted a part with paraffine. It was not tenacious and cracked. We have three pedigreed seedlings top worked, Genet pollenized by Ben Davis. We grew about 1,000 pedigreed seeds at a cost of about $30. They were planted November 12.

Rome Beauty pollenized by Ben Davis.
Rome Beauty pollenized by Grimes.
Ben Davis pollenized by Rome Beauty.
Ben Davis pollenized by Grimes.
Winesap pollenized by Rome Beauty.
Winesap pollenized by Grimes.
Winesap pollenized by Ben Davis.
Grimes pollenized by Benoni.
Grimes pollenized by Grimes.
Benoni pollenized by Chenango.
Benoni pollenized by Early Harvest.
Benoni pollenized by Trenton Early.
Benoni pollenized by Yellow Transparent.
Yellow Transparent pollenized by Benoni.
One lot, identity lost.

We have at our service only a few good varieties to operate on. The coming season we will work mostly for inbred seeds.

Have found the wood veneering a good protection against rabbits, but quite an injury to the trees. It is too close and makes a special harbor for woolly aphis. All will be discarded in the future. A number of important experiments will be inaugurated next season, but will not be noticed until our next report. The orchard cost the society for the year $125.

DISCUSSION.

Mr. Hobbs: State your success in crossing Rome Beauty and Winesap.

Mr. Burton: It is quite an idea with me to get a cross between the Rome Beauty and Winesap, and if I could make a thorough cross I would have an ideal apple and ideal tree, but on account of blooming at different times—Winesap first and Rome Beauty later—it is difficult to get pollen. I have never been able to find one particle of Winesap pollen. I have never been able to have a single Winesap set on where I enclose blossoms, either in paper sacks or cloth. Other varieties set on more rapidly where enclosed than when in open air. This season the Rome Beauty blossomed early, and I succeeded in getting a number of crosses, about 35 apples pollenized by Rome Beauty, and though we have no assurance that crosses will take, we hope they will.

Mr. Hobbs: It will be necessary to appoint a committee to have charge of this work. This committee is appointed annually, and its term of service expires at this meeting.

Professor Troop: The Committee on Experimental Orchard consists of C. M. Hobbs, Jas. Troop and Mrs. Stevens.

Mr. Burton: How long should they serve? It seems it would be well if they were not all changed at once.

Mr. Tilson: The Executive Committee could see after that better than we could.

Mr. Hobbs: The orchard is managed by Mr. Burton, who works in harmony with a committee appointed by this Society, committee of three persons.

Mr. Burton: I am a little particular about the committee. I do not want such a strong minded committee that I can not boss them.

Mr. Robinson: If Mr. Burton is satisfied with present committee, I move it be continued.

Motion carried, and committee is reappointed.

Professor Troop: My report as delegate to Pan-American Exposition can be shortened up to suit the time, and I move we hear Mr. Keach now, and then have election of officers before we adjourn for dinner. That will give the new board a chance to have a meeting during the dinner hour, and then we won't be rushed so when we come to adjourn this afternoon.

Moved and carried that we hear Mr. Keach on his subject at this time.

[No copy of this paper was obtained, but a clipping from Orange Judd Farmer is inserted.]

James L. Keach spoke on grading, packing and handling apples. He said that only a limited quantity of apples could formerly be saved, especially of the summer and fall varieties, owing to the glutted markets at picking time, but the advent of cold storage has opened the markets of the world and made practicable the handling of this fruit profitable, making the apple as staple as wheat. Planting of orchards has not kept pace with the increase of population, with the failure of many old orchards. We are now buying most of our apples from beyond the border of our State, while there are thousands of acres of land in the State which could be profitably planted to apples, without danger of overproduction. The climate and soil of the famous Ozark mountain apple region is not superior for growing apples to a large portion of our own State.

A Member: What is the outlook for the planting of commercial apple orchards in Indiana?

Mr. Keach: I know of two pieces of land, of 200 acres each, which are being put out as commercial orchards—one this side of Vincennes, the other this side of Bedford, Ind. The people who purchased this land are not farmers, but they are men who are interested in the apple business, and see in the climate, in the soil and in the general situation, a good investment for capital. They are thoroughly practical, and will plant an orchard for its commercial value, not because of any question of preference for one variety over another, or because this variety happens to have a little better flavor, or something of that kind, but it is a question of money making. In all probability these pieces of land will be planted largely to Ben Davis, Winesap, perhaps some York Imperial, Jonathan, a few Rome Beauties, but I think the varieties will run largely to Ben Davis, Winesap and Grimes Golden. There are a number of different varieties that are raised in other States that I believe would bring good results in Indiana, and I base my opinion on that from what I have seen here and there. I have occasionally run across a tree of York Imperial in this State, and I found the product very superior to product of Virginia; they raise largely York Imperial. I think experimenting in new varieties is a field open and worthy of consideration, but my advice in planting an orchard for market is, stick close enough to your principal varieties to have something to sell. In other words, if you have 500 barrels of apples to sell, you should not have 150 different varieties and but three or four barrels of each variety, confine yourself to a few varieties and make it an object to have purchasers hunt your orchard. Those orchards are in demand. There is today in existence what is known as the National Apple Shippers' Association, composed of the principal dealers throughout the United States (two members of this association are in Indianapolis), and made up of heavy dealers all over the Union. They devote some time and attention to looking up statistics; not only that, but hunting up good orchards, what they consider good orchards, are those that run pretty well to straight varieties. An orchard of that kind is more valuable to them, and they will pay more per barrel than for small orchards, and a saving in expense is material. A fine block of fruit, representing 1,000 to 2,500 barrels, is of sufficient importance to buyers to pay its full value and to put a force of men there to take care of it, but in small, five, ten, twenty and fifty barrel orchards the fruit must be bought low, as expenses are too high to justify paying a very high price.

This organization of the apple shippers has done some very good work in the line of aiding horticultural societies. They are in very close touch with them in Illinois, Missouri, New York—the large apple growing States—but little consideration has been given to Indiana, as there are so few good orchards. This season, orchards cultivated and properly taken care of—trees sprayed, etc.,—produced a good quality and quantity of fruit, but Indiana attracted but little attention from buyers this year, because where one orchard had been sprayed and taken care of, 100 orchards have been neglected, and the product was knotty and undesirable. That is the class of fruit that buyers are not looking for. Owing to scarcity of fruit this year, everything found a market, even very inferior stuff demanded a fairly good price. But to show you the difference between an orchard taken care of and an orchard neglected, I know of one orchard that produces a crop in the neighborhood of 10,000 barrels in Virginia, largely consisting of York Imperial, that sold at auction to the highest bidder. I bid on it myself, and thought pretty liberally, too, $2.65 per barrel, but it sold for $3.35 per barrel. The value of the orchard was largely in the fact that they run pretty straight to one variety. There was a block of fruit of sufficient magnitude to enable men to go there and take care of it, packing and putting away for the winter trade. Another thing that has changed somewhat the situation of marketing the crop of apples in Indiana, is the fact that the consumer today makes his purchases different to what they were made fifteen or twenty years ago. Take large cities. The consumer must buy every day, as the average consumer has no storage room outside of his ice box. Wealthier people have no storage room in the cellar, and poorer class of people—a great many—have no cellars; consequently, there is a constant demand throughout the winter, and this must be supplied from day to day, and a crop of apples in Indiana is easily marketed, and represents its face value in dollars and cents, and that value is just as staple as a crop of wheat. It has settled itself down to a basis where there is a fixed price set on apples in the fall of the year, and as the season advances the price changes as the situation justifies, but it is possible to raise and market any sized crop in this State. You hear a great deal about apple growing in Missouri. Their soil or climate is not superior to Indiana. Indiana has the advantage in both soil and climate, because their fruit matures and must be picked a little earlier than ours. Our fruit matures about the right time. Ben Davis in this State takes on a very high color, and this season the highest colored apples on market were produced in Indiana. The average color was superior to that of the fruit produced by any other State in the Union. You have marketing facilities in the State of Indiana that are valuable. You are located where you can reach the foreign market, reach London, to much better advantage than those western States, because when you go west of the Mississippi River your freight rate is much higher. In addition to that, you are right in the center of a large population, and you have an outlet to the south, east; you have the north and northwest. You are very fortunate in your location, and if you had apples in sufficient quantity to attract buyers, the prices paid for apples in Indiana would be higher than they were from these more distant points for reasons mentioned.

Mr. Hobbs: On behalf of the Society I wish to thank Mr. Keach for this very valuable paper.

Mr. Shoemaker: Before he leaves I wish to ask some questions.

Mr. Keach: I will be glad to furnish any information I can, as I feel just as much interested in this work as any member of your Society, and on that line want to say this National Association, I mentioned a moment ago, meets along in the summer about first of August, and at their next meeting I will be a little more interested in seeing if I can arrange for this year book for distribution among your membership, as there is a great deal of very valuable information contained in it. They are especially interested in producing good fruit.

Mr. Shoemaker: Regarding different parts of Indiana as to adaptability to raising apples, a few years ago in this Society the matter was discussed and the State was divided in three different classes, northern classed as fruit and apple region, southern as good apple region, while central part was not so regarded, and even they discouraged apple growing in the central part. I would like to know whether it would be advisable to plant apples in the central part of Indiana.

Mr. Keach: In different parts of the State there is a difference no doubt in soil. In the northern part of the State I have seen as handsome Baldwins, Greenings, Yellow Bellflowers, Maiden Blush and such varieties, as I ever saw anywhere, and they mature late and at proper time. Those same varieties grow well in the southern part of the State, but mature too early before marketable value. I do not think there is a county in the State of Indiana that has proper soil but what is an apple producing county. Do not think the question is so much a question of location in the State as it is proper varieties that will grow and give good results. Take the southern part of the State, it is an established fact that Ben Davis, Winesap, Rome Beauties are good producers as well as Grimes Golden, and there is, I am satisfied, a great opening for the Jonathan apple in the same sections, that is in southern counties. I have found Jonathan apples at various times where the owner did not know the name of the apple. That leads me to believe it would be a good producer, and there is no apple grown to perfection that nets better results, as for instance today we are getting from $4.50 to $5.50 for Jonathan, while Ben Davis is selling from $3.50 to $4.00. When I speak of apples I speak of a No. 1 apple. But any quantity of Ben Davis, from neglected orchards, are selling considerably less than that, from $2.50 to $3.00, as bulk of Indiana crop really is No. 2's, but there are cultivated orchards, sprayed and taken care of, that are the exception. I want to call attention to a question of bitter rot. I suppose a good many are familiar with it. It is getting to be quite a serious question. Any county in Indiana will produce good apples. I have never found a good tree that received good care, when there was a crop in Indiana, but what had a crop.

Mr. Shoemaker: Are those varieties for southern Indiana suitable for the level region of central Indiana?

Mr. Keach: I think they are. A commercial orchard, near this city, owned by Mr. Flick, produces paying crops of good quality, and within the last few years there have been apples, in a small way, grown around Indianapolis, the quality of which was fairly good, and this shows that if they had the trees they would have the fruit. No question about this territory producing the fruit.

Mr. Shoemaker: If sixty or seventy-five miles away from cold storage, I would like to know about expenses?

Mr. Keach: A man situated sixty or seventy-five miles away from cold storage and unsettled in fall of year as to proper course to pursue in disposing of his crop, would first take up the question of cold storage and make his arrangement after making his contract for storage. The price for cold storage runs at so much per barrel or so much per season. The usual price is 15 cents per barrel for the first month and 10 cents per barrel for each additional month, or 40 cents for the season. The season rate means you may put your apples in at packing time and may take them out any time between that and first of June, any time you are ready. The cold storage people see to this business. You put yourself in correspondence with them and they will make you a rate; you pack your apples and ship them direct to the cold storage and they send you a warehouse receipt. The apples are yours and never leave your possession at all, and they are at your disposal. You can take the buyer to cold storage and show him your apples at any time. There is some difference made in rates. Contract for your rates. There are three cold storage buildings in Indianapolis, and if one asks too much, go to the other. Price would be for the season, 40 cents, 15 cents per barrel and 10 cents for each additional month. They are ready to take them just as early as shippers are ready to send them in. When packing for cold storage, apples should be picked early, as soon as they have taken on full color, not premature, but not permitted to remain on the tree until they commence to drop. Should be picked full early. The apple passes through various stages of decomposition. Take it before mature and get it into cold storage at once, and there is no telling how long you could keep them.

Mr. Burton: What chance is there for storing our apples for St. Louis Exposition through summer?

Mr. Keach: No trouble at all for you to arrange for cold storage. I do not know how they will arrange exhibit at St. Louis. At the Paris Exposition they had a cold storage room fitted up on the Exposition grounds, and no doubt the same thing will be followed in St. Louis. In selecting apples for the display at St. Louis Exposition you should be careful to get them there in good condition. Of course they should be carefully handled. If necessary, send them by express at greater expense; they should be got there in good condition. The package in which they are displayed should be made as attractive as possible, use various sized packages. There is in common use a California bushel box. With highly colored fruit, the bushel box makes a pretty show, and lying out one side the contents show to good advantage, but in making your display, you should be very careful as to both your package and your packing, and have them as attractive as possible.

Mr. ———: Would you advise putting Wealthy in cold storage for Christmas?

Mr. Keach: No; not for Christmas trade. It is not necessary. Wealthy is a good eating apple, and matures at a time when there are plenty of soft apples, and these early varieties placed in cold storage can be taken out and put on the market in advance of winter apples. Such varieties as Ben Davis, Winesap, and varieties of that kind should not be considered as on the market before January or February. We are marketing Ben Davis now, ourselves, but of quality we have not much regard for. The bulk of my apples this year came from Kansas, and I paid big prices for them and paid high rate of freight, 60 cents per barrel, to get them in here, but wanted quality. As to the question on Wealthy —the Wealthy is a good cold storage apple, and its time for marketing is in advance of others, about Thanksgiving.

Mr. Little: Does the Keiffer pear keep as successfully in cold storage as apples, and how does it handle after it comes out? Is it liable to decay?

Mr. Keach: Dealers differ very much as to the Keiffer pear. I have but little regard for the Keiffer pear for cold storage. For some reason it seems to turn brown, and the results I have had with Keiffer pears in cold storage have not been very satisfactory. There has been times when the market was in such a condition that I could not dispose of them. Put them in cold storage to prolong life, but results are not satisfactory. They seem to discolor and turn brown.

Mr. Kingsbury: Mr. Keach would be a very valuable member of our Society, and I move that he be made an honorary member of our Society. Personally, I feel very grateful to Mr. Keach for this very practical talk along the line we are interested in, and just what we needed at this time.

Could this Society become a member of the Apple Shippers' Association you spoke of?

Mr. Keach: No; you could not become a member, but it is their desire to be in as close touch with the various Horticultural Societies as possible, and that is readily explained. Their interests are identical with yours. If no apples are raised they have no business. If their business is to prosper, the apple growing business must prosper, and they are interested in bringing up the quality to as high point as possible, because there is today an export demand for apples that runs up in the neighborhood of 2,000,000 barrels yearly, and as to how much that can be increased, depends largely upon growers of the United States. That can be increased in proportion to quality of fruit they raise and attention they give to raising and handling of it. Markets are open to us, and there is not any such thing as over-production.

Mr. Maish: Have you had any experience in storage of small fruits—strawberry, raspberry, blackberry and grapes?

Mr. Keach: Yes, sir; I have had experience in cold storage with small fruits, strawberries, raspberries, and various berries of tender nature. Cold storage is useless except where a surplus may arrive on a glutted market, or carried over temporarily from day to day, but there would be no object in placing strawberries in cold storage to hold for any length of time. There is no purpose in it and strawberries are something that ripens every day and should be sold every day. As to grapes, the results are very good. Grapes can be held in perfect condition in cold storage with very little shelling, unless held too long. Can hold grapes for fifteen to twenty days, that carries you generally out of the glut. You can hold them fifteen or twenty days with very little shelling. After that they age up and stems and grapes shell off.

Mr. Swaim: In regard to other varieties of pears, summer pears, how long can Bartlett be held safely?

Mr. Keach: Bartlett pears raised in vicinity of cold storage, handled carefully, picked at proper time, which is when pear is matured and not when it has remained on the tree until colored, but when it has its growth, can be held with every degree of safety for six weeks, and will color up in cold storage and come out in its most desirable condition.

Mr. Swaim: How about keeping quality after taken out?

Mr. Keach: Fruit, such as Bartlett pears, coming out of cold storage is not expected to keep any great length of time, as for instance, when we have in cold storage Bartlett pears, we bring to the house each time what we expect to sell. If weather is warm we bring them in smaller quantities—what we expect to sell in two or three hours. If pears are ripe they are generally purchased by grocerymen or fruit peddlers who purchase enough to take care of their wants for that one time, and of course will not keep long after coming out of cold storage. The bulk of Bartlett pears in this country are raised in New York State. They are packed early; as soon as the pear has its growth, quickly placed in cold storage in New York State, for instance, pears picked today are hauled in this evening, shipped tomorrow, and next day are in cold storage plants near by, and held in cold storage until a market presents itself; then if they are to be shipped west, we frequently have them here loaded in refrigerator cars, arrive here in perfect condition, and after they arrive here, if we find it necessary to try to prolong the life, we take them out of the car and put them in cold storage again, but there is no necessity for these goods being exposed to the weather only in very limited quantities.

Professor Beach: This subject has been covered so well and so thoroughly I consider it good fortune for me to have the privilege of hearing this valuable address and discussion on this point. It is decidedly important that we understand the best methods of getting money back for a crop after we have grown it. It is all right to understand cultivation, methods of orchard management, and spraying, in order to raise good fruit, but then some men fail after they raise good fruit—fail in getting proper returns. The fact is that if you are going to put apples in cold storage at all, they want to be put in right from the tree. In some apple growing sections of New York, some cold storage people declared a year ago they would not accept them in barrels lying around in farmers' woodhouses or cellars; their experience had been, it would not pay, and they had found by experience that in some sections of the country it is desirable to get apples from the tree into cold storage immediately. The other idea was, the work of this Society may do in helping select list of varieties for planting which are good cold storage fruits. There is a difference as to how well they handle in cold storage; some varieties of apples are liable to scald in cold storage—a very important matter. If the coming methods are to be cold storage and cultivation of leading varieties, it is very important that we select those varieties which are handled well in cold storage.

SOME DUTIES WHICH THE NURSERYMEN OWE TO THE GENERAL PUBLIC.

BY W. H. FREEMAN.

[No copy of this paper was obtained, but a clipping from Orange Judd Farmer is here given.]

W. H. Freeman told of some of the duties which nurserymen owe to the general public. Among others was the necessity for establishing a better sentiment of general honesty and thus gaining the confidence of the public which has in a measure been lost through misrepresentations by unscrupulous parties. He objected in strong language to the extensive advertising and planting of Carolina poplars. He argued for the planting of windbreaks for orchards and closer planting for better protection from storms and sun. He also stated that forest planting had become imperative and urged nurserymen to prepare to meet the demand for native forest trees which is already here.

DISCUSSION.

Mr. Cox: I would like to know why a tree set in fall and rounded up with dirt won't grow just as well as heeled in and set in spring? My experience is, the best time is to plant in the fall, and get it out of the way for spring work.

Mr. Freeman: Trees planted in the fall and rounded in carefully may do just as well as planted in spring, but the chances are against them, as they do not get good root-hold and the spring climate and winds of winter evaporate moisture from the limbs. If planted in the spring the root-hold is sufficient to keep up moisture circulation all winter and overcome them. I am not saying that fall planting is not good, but that spring planting is better.

Mr. Little: If I were to plant any hardy trees preference would be to fall. You know greenhouse men encourage roots by heat. A cutting is full of material growth, and does not have power to make root. Direct it down and cause it to make roots, and then it has something to sustain it. All men who propagate cuttings know this is a fact. Plant a tree in the fall and round it up and in the spring level it down. The earth has a certain amount of heat in it, and the roots are down where they receive this heat, and in spring when the weather gets warm the roots start. If you plant a tree properly in the fall it certainly will make twice the growth the following season and is much surer to grow than a tree planted in the spring.

Mr. Shoemaker: What varieties of forest trees do you recommend to be planted in this State?

Mr. Freeman: If any of you wish trees from the Agricultural Department, if you will send your names in I will try and see that you are all supplied. As to what quantity they will supply, I do not know, but can not say that they will supply any large quantity. Probabilities of Congress not doing much in that line.

Mr. Maish: Would you recommend trees native to State?

Mr. Freeman: It depends on what you want to plant for. If for commercial purposes plant such as walnut, ash; if for other purposes, altogether different.

Mr. Shoemaker: It is hard to tell what would be the needs of the farm for ordinary purposes, for lumber.

Mr. Freeman: For posts and fences I recommend five trees, black locust, osage orange, Kentucky coffee tree, Russian mulberry and catalpa. They are pretty good growers, and are durable when set in the ground. These trees are selected with that idea. For general farm lumber there is nothing for quicker growth than elm, ash and walnut. Hickory is a slow grower. Birch are good growers, also wild cherry. Forest trees are not quick growers to make lumber. That is one thing against the business. This generation will have to plant for the next generation. For shade purposes plant the native forest trees, sugar maple, elm, green and white ash, most all oaks outside of white oak. The soft maple is not a good tree for shade, while it is one of the quickest growers and temporarily is all right, but it is not doing well because it is a tree that requires a great deal of moisture, and in a few years the trees die because the water supply is cut off. Plant trees with roots going down. Sidewalk should be next to street.

Mr. Maish: In regard to heeling in, we have different ideas. Do you cover the entire tops or not?

Mr. Freeman: Leave the tops exposed with tops to south and roots to north.

Mr. Little: Have you any evidence in regard to the durability of Kentucky coffee, tree?

Mr. Freeman: Yes, sir. There is evidence. I based the information I am giving you on reports sent in from different parts of the State. The Union Pacific railroad is using them, and they are recommended as the best for these purposes.

Mr. Little: What is the best evidence as to durability of catalpa?

Mr. Freeman: Pennsylvania railroad ties in use for fifty years are as good now as when put in.

Mr. Little: What time were they cut?

Mr. Freeman: All seasons of the year, I suppose. In cutting fence-post timber, never cut them in sap. Catalpa cut in full sap will rot in three years, but if cut in winter time, I have records where in this State it has been in the ground twenty-five years and is good today.

Mr. Davis: Are there not two species of this tree?

Mr. Freeman: The catalpa speciosa is the only one that lasts. The catalpa speciosa or hardy catalpa is the one you want to plant for posts. The other does not have the lasting qualities.

ELECTION OF OFFICERS.

The President declared the next business in order was the election of officers. The result of the balloting showed the following:

W. W. Stevens, of Salem, was elected President.
E. M. C. Hobbs, of Salem, Vice-President, Southern District.
W. C. Reed, of Vincennes, Vice-President, South Central District.
E. B. Davis, of Cartersburg, Vice-President, North Central District.
J. C. Grossman, of Wolcottville, Vice President, Northern District.
W. B. Flick, of Lawrence, Secretary.
Sylvester Johnson, of Irvington, Treasurer.
Joe A. Burton, of Orleans; Prof. James Troop, of Lafayette, and H. H. Swaim, of South Bend, members of the Executive Committee.

AFTERNOON SESSION.

Friday, December 6, 1:30 P. M.

The Committee on Exhibits made its report through W. C. Reed, Chairman. (No copy of this report could be obtained.)

The President, Mr. W. W. Stevens, announced the next in order the consideration of the subject of "The Conditions of Success in Growing the Bush Fruits," and that Mr. D. F. Maish would introduce the subject.

THE CONDITIONS OF SUCCESS IN GROWING BUSH FRUITS.

BY D. F. MAISH, FRANKFORT.

The conditions attending the successful production of bush fruits, such as raspberry, blackberry, currant and gooseberry, are not very unlike those attending the production of all other fruits and farm crops. There are some special adaptations that should be observed in regard to soil, location, etc., but we believe the bush fruits will succeed over a larger range of territory than those of any other species. They are also a safe and profitable crop to grow for either home use or for the market. The application of good, ordinary common sense to the selection of soil, location and varieties, coupled with perseverance and industry, is certain to bring good results in growing any of the bush fruits. If you desire to grow these fruits for market purposes, you should study the needs of your locality and if there is not already a demand for such fruit it is better to begin on a small scale and "work up" your trade until you have reached your capacity. The facts are that there is always a good, healthy demand for these fruits all over the country, and except in some unusual seasons, at good living prices. Don't try to grow fruits for market if you have a dislike for the business or if you have no adaptation to it. It takes a good salesman to get best results from the business. The production of fruits of the highest quality is the greatest help in reaching the best markets and highest prices. Study, think, work. These are some of the conditions of success. No man will succeed at this or anything else if his mind is not set to his work, and he is easily switched off onto something different. To be more specific, we wish to notice a few of the essentials to successful fruit culture as relates to the soil, the climate and the man. These three, with cultivation and selection of varieties added, we believe to be the conditions upon which success or failure depends.

We all understand that without soil we can not proceed to grow anything in plant life. We are also aware that extremes of heat and cold and moisture are not conducive to plant growth of any kind, much less to bush fruits. We know, too, that the man, the real thinking, acting man, is that upon which most of all depends for success. Crops must be planted, cared for, and harvested in turn. Proper varieties must also be selected.

The Soil.—The soil best adapted to bush fruits is one that is neither too light nor too heavy. Well drained clay soils put in a proper state of fertility by the frequent use of barnyard manures and clover and cultivated in some hoed crop, sweet corn, potatoes or beans, makes an excellent site for any of the the bush fruits, and, in fact, fruits of all kinds. Sugar tree land is considered ideal fruit soil in Indiana. If you haven't sugar tree soil on your place make your soil to conform to that kind as near as you can. Light, chaffy soils are to be avoided. Black land seems to have the fault of growing too much wood and not enough fruit. It also has the fault of not giving good color to fruit. In a seven-acre blackberry plantation where the rows are eighty rods in length, and where soils of almost all kinds are encountered, we find the heaviest loaded bushes and the plumpest, juiciest berries on the higher clay points that were once covered with large sugar tree and white oak timber. Canes are more hardy, thrifty and upright in growth. We should recommend that all clay land be thoroughly underdrained with drains not above two to three rods apart. Don't try to get something for nothing. Our country is now old enough to begin to do things right, and this is one of the most important things to do.

The Climate.—While the climate is a very important condition to success, there is not a great deal to be said about it. The climate of Indiana is all right for bush fruits, and barring a very severe winter now and then and occasional late spring frosts we have little to complain of in the matter of climate. Raspberries have suffered most from severe winters. Not since the year of '95 have we had general destructive late frosts; and the season of 1901 we note as the most destructive to the blackberry crop from excessive heat and drouth. We lost a great many berries last season during the heated period for lack of help in picking. Hot? Indeed it was. I think every fruit grower will remember it. But these extremes of climate are the exception and not the rule and no one need hesitate to plant bush or any other fruits in Indiana on account of the climate.

The Man.—As previously noted in this paper we believe man to be the most important link in the chain of conditions that relate to success. The man who is going to succeed with bush fruits can take "any old soil," in almost any climate, and get proper results. Man can bring success or failure at will. If the man isn't right, there's no use to talk about soils, cultivation, climate or anything else; success can not come. You can not imagine success without intelligent thinking man. He must know what he's about. He should have a natural like for the beautiful and the more intricate things of nature. He should be able to see something more in the business than blackberries, raspberries, gooseberries and dollars. He should have good business qualifications to enable him to place his products upon the market to the best advantage. He should be industrious, or weeds and thistles will infest his plantation and rob him of his profits.

Planting and Cultivation.—Planting should not be attempted until there has been thorough preparation of the soil by frequent harrowing and pulverizing until there is a fine level surface. The plowing should be deep. Ground should be in a state to crumble, so that the soil may be easily worked about the roots of plants. When everything is in readiness ground should be marked off in rows about seven feet apart for blackberries and six to six and one-half feet for raspberries, gooseberries and currants, and good, deep furrows made as needed with single shovel or any good furrowing implement. Plants should be set two to three feet in the row, with soil well worked about the roots and firmly pressed.

Cultivation should begin as soon as planting is done to break up foot marks and leave surface in a fine pulverized condition. Some root or vegetable crop can be grown between the plants the first and second year and thus prove a source of income while plants are coming into bearing. Cultivation should be thorough and frequent, and after the first year it should be shallow near the plants. For retaining moisture a good earth mulch is the cheapest and best. Prune blackberry and raspberry by pinching out leading bud when canes are from sixteen to twenty-four inches high, and in the spring cut back laterals to twelve or fourteen inches of main stalk. Gooseberry and currant should be pruned by cutting away old wood as fast as bushes become too thick. In selecting varieties, it is a safe plan to inquire as to what has succeeded in your locality. Also look up reports from the experiment station and State Horticultural Society. See what varieties have been tested. Many people have failed in growing bush fruits because they planted mostly of some new, untried sorts. Better to plant sparingly of new varieties until you have become acquainted with their merits. Nurserymen and tree agents have not always been fair in recommending the kinds that succeed. It is their business to sell the high-priced plants if they can; it is your business to know whether it will pay you to buy them. For a succession of fruits for both home use and for market we would recommend the following:

Blackberry—Early Harvest, Snyder and Taylor's Prolific.
Black Raspberry—Palmer and Gregg and Kansas.
Red Raspberry—Hansel, Cuthbert and London.
Yellow Raspberry—Golden Queen.
Gooseberry—Downing, Houghton, Pearl and Champion.
Currant—Fays, Pomona and White Grape.

In conclusion, let me say if you are an old man, plant fruits in abundance. If you are a young man plant them in greater abundance, and the generations that come after you will rise up and call you blessed.

President Stevens: The subject will be further continued by Mr. E. B. Davis, of Cartersburg.

CONDITIONS OF SUCCESS IN GROWING STRAWBERRIES.

BY E. B. DAVIS, CARTERSBURG.

To begin, I would say there are a few fundamental principles underlying or leading to successful fruit growing. And then there are a variety of accomplishments which could correctly be called successes. I have grown, on 400 hills, as fine berries and seemingly as many as could well be matured, considering the effort a success; I have grown patches as much for the pleasure and beauty as for the fruit and have met with success; but I presume the success we are to consider here is the kind that makes glad the pocketbook—the kind that makes a good bank balance. This latter success I have also had. Then what are the conditions of these successes? The man, market, soil, plants, insect and fungous diseases we have to combat.

The man must be a natural horticulturist and love his work and in many respects he must be a genius. He must learn at the beginning that a fine crop of fruit without a market will never land a bank account; that a good market with very inferior fruit will never compensate him; that it doesn't pay to begin on a big scale, but better do a little at a profit than much at a loss; that as his knowledge increases his capacity to conduct a more extensive business increases; that he must be genius enough to know where to locate, what and how much to plant, how to market, etc. He must understand soils, fertilizers and varieties; he should understand botany and entomology; in short, he must be fitted for this business or he will never be a winner. Laziness and success don't go well together.

The man and market are very closely related; the man can make the market and often the market can make the man—hustle.

I have always made it a rule to dispose of my fruit in nearby towns, rather than ship to large cities, where the returns are in proportion to the commission man's conscience: and another strong point in favor of home market is the opportunity to build up a fancy trade by educating your customers to appreciate a good article. Your fruit goes directly to customers instead of being used to top-dress somebody else's inferior berries. Use a private stencil on every box, be it pint, quart or crate, so that customers may learn your goods.

Establish a reputation by giving honest measure and honest fruit. I will not even hint to the members of this society that our customers like good berries in the bottom as well as on top of the box. Become familiar with the wants of your trade and supply those wants, then charge accordingly. That old thread-bare, worn-out saying, nevertheless true, that the market has never yet been supplied with fancy fruit, is especially applicable to the fruit under consideration.

Soil.—We designate our land as being rich or poor and sometimes the so-called poor soil, with proper treatment, is the most fertile; often the rich soil is deficient in some essential elements necessary to successful berry growing, so here comes the point where the man must be master of the situation. If he has the necessary education along this line he will be able to tell which soil will retain the most moisture, which soil is adapted to plant growing and which to best development of fruit. He will be able to tell a light, warm soil from a heavy, cold soil and use the manures and fertilizers accordingly. It does not seem that it would be necessary to state that the soil must be well drained naturally or artificially in order to insure success in strawberry culture, yet I know men who are trying to reach this commercial success by planting on waterlogged soils, in low ground in order to beat a drought. Some plants will succeed fairly well under these conditions, and this brings us to the next topic.

Plants.—Some are adapted to low, mucky land; others to light, sugar tree soil, and others to heavy clay. In fact, we have varieties adapted to all soils, climates and conditions. This is very fortunate for a certain class. (I mean those who beg a few plants, set them out and never see them again till berry time next year.) But I do believe one of the most important conditions of success is starting with good plants. The plants that I use must have a good bunch of clean, yellow roots, a large fruit crown and healthy foliage. Certain varieties produce much stronger plants than others under similar conditions; so the strongest of each variety must be used. They need not be pedigreed; sufficient if good, clean, healthy, pure stock, with the pedigree expense left off. This latter statement is from both observation and personal experience.

Now, after discussing the man, market, soil, plant and varieties, and having everything all right thus far, and are ready to land that bank account, we may see it slip through our fingers and away from us if we are troubled with insects and fungous diseases. Those ideal plants may have a year's growth, and, in fact, may be loaded with blossoms and even fruit and then our hopes fade away when those little leaf rollers begin to devour the glossy leaves, the lungs of the plant. And even after the fruit begins ripening, a very bad case of rust will ruin half the crop; so we are not so sure of that desired success until every berry is marketed and every bill collected; and, must I acknowledge it, sometimes the balance is on the other side of the ledger. Unless all these fundamental principles are closely followed, and a hundred other minute details are closely watched, we can not hope to reap the reward awaiting us.

To those desiring berries for home use, I would say that there is nothing impossible about growing them. Prepare the soil early in spring, set good plants, even if they cost two or three cents each, and be careful about getting both bisexual and pistillate. Give good cultivation, mulch when the ground is frozen, and next spring, when fresh fruit is a temptation, you will have an abundance of the choicest fruit to set before your "better half" and your "little ones."

[The stenographer's report contained no discussion of this subject.]

The President: The next subject on the program is "Advantages of the Local Horticultural Society," by Mr. Royer.

ADVANTAGES OF THE LOCAL HORTICULTURAL SOCIETY.

BY E. E. ROYER, WOODRUFF.

This subject naturally divides itself into four principal phases, viz.: Social, literary, educational and practical. We are living in an age when mutual interests and mutual desires must be carefully considered. We are taught that "No man liveth unto himself," but that his duties are of a three-fold nature, viz.: to his Creator, to his fellows, and to himself. Our business relations of the present demand co-operation and united effort. It is not only a privilege but an imperative duty that we should unite in common interests, not for self-aggrandizement, not for filthy lucre, but for the elevation of our occupation and those who are engaged therein. Our State societies can do much to enhance common interest in our cause. Our district societies may enthuse the leaders, but our local societies must reach the masses. It must come into the home and draw from the "sons of toil" thoughts, ideas and practical suggestions. For upon the common people of any cause rest the push, energy and prosperity of that cause.

The social feature of our local societies is of much and lasting benefit to its members. The hospitality of the farm home outrivals all others. It is informal and unassuming, a true expression of the inner life. Not artificial and superficial, but deep rooted and well founded. The words of welcome, the kindly smile, the hearty shake of the hand and the ladened board, bespeak in stronger terms than all the pomp and gayety of the world. Those homes desire and welcome friends, visitors and companions, and companionship is a boon to the human race. It is that which encourages, cheers and consoles. Many lives are brightened, many pathways are made smoother, by the companionship of humanity. Its desire is universal. It is found in the most degraded beings of creation, lodged in the hearts of the sturdy peasantry of the world, and is not lacking in the most cultured and refined. This desire had its origin when man was placed in the garden of Eden, and it will remain until he ceases to exist. Its culmination is in the home of the horticulturist and farmer. It is not sham, but genuine worth. We often think of the world as being cold and formal, and many times we are judging rightly, but in these homes all formality is cast aside and we are all free to think and do as we deem prudent, and each meeting will place us upon a higher plane of sociability. Each noble thought and deed will react in our own lives and make them better. The literary culture received by our younger members and many of our older ones, is of great benefit. We say older, in years but not in spirit, as progression is characteristic only of those who are possessed of this endowment. Hence all should be young. This phase of culture is recognized in all professions as being a prime essential, and who will deny the fact that horticulture is a profession and ranks on an equality with others? The papers read, the varied discussions given, and the talks rendered will be the means of arousing a love for the cause of horticulture and agriculture in the hearts and minds of the young, and volunteers will not be lacking for the cause, and without a love for the occupation success will not be achieved. Our great poet, Longfellow, has truly said that "the heart giveth grace unto every act." Literary culture is also necessary to poise our lives and character, and without it we become mental dwarfs. We must be balanced in the moral, mental and physical, for without this culture we fail to justly and rightly perform the duties and functions assigned us by our Creator.

In the third place, the training that we receive in this literary work is educational in its nature. We assemble in those homes not only to cultivate sociability, satisfy the physical appetite and listen to others, but also to reason together. To grapple with the complex problems which arise, to consider the proper solution of those problems and acquire power to master them. Education does not consist only in storing the mind with facts, but the assimilation of these in our own lives. Assimilation of facts comes largely from discussion and interchange of ideas. Facts must be revolved in the mind; they must be considered from all sides, and must be enlarged and expanded; relations must be discovered and traced. The farm, the garden and the orchard all form laboratories for the most profound mind and logical investigator. Nature with all its wonders, its beauty and grandeur, unfolds itself to the student. Our scientists construct laboratories in art, in medicine, in chemistry and in physics, but these are only side shows to the great panorama that is portrayed in mighty splendor in the farm, garden and orchard. These subjects are treated in general by those who have a knowledge of the same, and by this an education can be acquired that is second only to that received in our regular agricultural schools and colleges. In this way an education will be gained that will give us power to reason, investigate and construct. Systematic development is an absolute necessity in any profession. The mind must be trained along the lines of right, clear and logical thinking. The world has ceased to place the greater stress upon muscular development, and now recognizes the development of mental power as paramount to all others. In our local societies the work is performed in a general way, along those lines just indicated.

In the fourth and last we consider the practical phase. Our age is an extremely practical one. There is constant clamor for practical men and women who have thoughts and ideas of their own—original ideas that are products of their own investigation; men and women who have the science, and with it the constructive art. By constructive art in horticulture and agriculture we mean the power of discrimination and selection; power to put into practice thoughts and ideas that are obtained from others; to bring under our control the chemical and physical force in effect about us; power and judgment to decorate and arrange, conducive to beauty and gracefulness. The mind, although it may not be cultured, is sensitive to confusion and disarrangement, hence the necessity of this constructive principle in the great laboratory of the farm. The ultimate, in any profession, is the practical. Success is dependent to the extent that we can apply our theories and ideas. It is true that theory must precede practice, but practice must follow theory or failure results. These local societies do much to arouse the dormant brain and slumbering mind, quicken the activity of thought and create a spirit of inquiry which leads to investigation.

Let us then encourage our local societies by word and deed. Let us endeavor to so instruct the coming generation that they may cultivate a disposition of sociability, a love for literary work, and a desire for a broad and liberal education, that they may be prepared for life in a practical sense when its reality dawns upon them.

DISCUSSION.

Mrs. Stevens: I do not believe anything I may say would profit you, and there are other discussions that will. The points in the paper were all excellent. While the State Society is supposed to give instruction to local Societies, local societies are supposed to give aid and support to the State Society. Had we a local Society in every county in the State, and that Society sent but two representatives, the information given in the State Society could be carried back to local Societies and be a benefit. Also the benefit by exchange of opinion would be of inestimable value. In discussions that come up here, we see very readily, conditions that prevail in one section do not prevail in another, but general principles are applicable to all, and this should form a bond of union between local and State. This is the most important feature of the question.

Mr. Kingsbury: Do any members present have any receipt for bringing the young people into this Society? For years we could not get young people to take an interest in our Society. If any have succeeded I would be glad to hear of it.

Mr. Swaim: There is one thought that occurs to me, and it seems to me it would add as much to the State Society, as Mr. Kingsbury suggested, to get young people into local Societies, and that is, there should be some effort made to get more of the ladies to attend our meetings. At all meetings the ladies have been very conspicuous by their absence. Our local Society took action at their last meeting which I think is to be commended. They resolved to pay the expenses of a delegate to attend the State meetings. The action we took at our last session was to not only send a delegate, but send his wife along with him, or at least pay expenses, if she wishes to come, and I believe if the Societies would take that action we would have better attendance of the ladies.

Mrs. Stevens: I notice the same fact is present in meetings of all kinds. We notice we have not the young people. You in the Marion County Society, here, are in a worse fix than in the country, as you have so many attractions outside. Where local Societies are held in country towns there is not the trouble in getting them there that there is in your Society here. But you will notice it in farmers' institutes and in churches, we are not getting many young people, especially the young men, but there is no royal road to success in getting young people to attend.

Mrs. Royer: Our Society is composed of about one-half the young married people in the county, about thirty-seven members. When first organized, two years ago, there were only about nine, and we think we have done well. Some think when father and mother join, that includes the whole family, and this year we have conducted a class for young people. Sometimes we took for our subject the apple; and young married people conducted that class along the line of describing the apple. Would prepare questions and give to young people, and they would read them and ask such questions as would distinguish the apple. Sometimes we take the strawberry. The young married people have taken an active part in the Society and also the Farmers' Institute. We feel we have much to be proud of.

Mr. Henby: It seems to me this Society could be made to grow and have enough life in its meetings to cause the attendance of several hundred. The special rate on railroads would add a great deal to it. The car fare is quite an item. If we could get half rates we might bring our wives.

Mr. Grossman: In our section of the State we took advantage of the rate this week at the Poultry Show.

Adjourned.

REPORTS OF LOCAL SOCIETIES.

REPORT OF THE WAYNE COUNTY AGRICULTURAL AND HORTICULTURAL SOCIETY.

WALTER S. RATLIFF, SECRETARY.

To the Indiana Horticultural Society:

I herewith submit this, my annual report of the Wayne County Agricultural and Horticultural Society, and with it a roster of the officers of the society for the year 1901.

Our organization held twelve regular sessions during the year. A part were held in the society's room in the county court house in the city of Richmond, where afternoon meetings occurred. The remaining sessions were all-day ones and were held at the country residences of some of the members, where the attendance was large and hundreds partook of the picnic dinners that occurred at high noon. These dinners, together with the co-operation and hospitality of the host and hostess, made these rural sessions among the most enjoyable and pleasant ones of the year.

The exhibition tables at all meetings contained, in their seasons, the results of man's labor on the farm, orchard and garden, and it has been amusing to note the friendly rivalry among the growers of these articles. The ladies, too, often exhibited fine potted plants in bloom and bouquets of beautiful cut flowers in their season.

The annual, February, was one of the most pleasant features of the society's work, and enjoyed by hundreds. The premium lists having been previously announced, the housewives industriously vied with one another in their efforts to secure the premiums on the culinary articles, such as roast fowl and beef, breads, pies, cakes, butter, salads, jellies, etc. The awarding committee, after completing its work, the premium articles were placed on other tables already laden with all the viands that were necessary to make a dinner complete. The society was fortunate in securing addresses from men and women of influence and culture, which added largely to the entertainment and instruction of those present.

Officers for 1901—President, Caleb W. King; vice-president, Rev. R. D. Laughman; recording secretary, Walter S. Ratliff; treasurer, J. P. Norris; corresponding secretary, Hon. J. C. Ratliff.

Apples.—Although some varieties were wonderfully well laden, yet the apple crop was not an average one. The summer and early autumn varieties did fairly well, but the codling moth and other insect pests, together with the severe and protracted summer drouth, lessened the yield of the earlier varieties and almost obliterated the winter supply of the later sorts.

Pears.—A fine season for pears, and, although the bulk was not so large as common, yet the supply almost equaled the demand. The early Catharine, Tyson, Fall Butter and Lawrence were seemingly affected most by the drouth.

Plums.—Although not so large a yield as common, yet the specimens were practically free from insect ravages and other imperfections. So many of the plum trees, especially of the Damson variety, are at present affected with the dreaded black knot on the branches that the further planting of this very important kind of fruit is likely to continue to be sadly neglected.

Cherries.—A fair yield, with fruit of a good quality and reasonably free from insect ravages. The older trees did best and the supply almost equaled the demand. It is hoped that more generous planting of cherry trees will be had, especially throughout our cities and towns, where they always bear well.

Quinces.—Since the severe freezes of a few winters ago, the quince bushes have hardly regained their former growth and vigor, and the supply was far inadequate. The ease of propagation of quince cuttings ought to be an incentive to lovers of this kind of fruit to have more trees growing in their dooryards than are at present found.

Peaches.—Trees in protected localities were heavily laden as well as many others in more exposed places bore a fine lot of fruit, so that the local supply was ample, and the impetus given to future peach culture by the past two years' crops, will be lasting, and many new individual trees, if not small orchards, will be planted.

Grapes.—An exceptionally small yield. The vines were severely winter killed, with a wet spring, followed by a dry summer, together with the ravages of the troublesome berry worm, reduced the chances for a crop so that at the time of ripening but few perfect bunches of grapes were to be found on most of the vines.

Dewberries.—The cultivation of this most excellent fruit has been, especially in this section, almost entirely abandoned, perhaps on account of its uncertainty of bearing; yet it is possible that our soils are not adapted to its successful culture and our fruit growers may not have a knowledge of the correct manner of its cultivation.

Strawberries.—Within recent years the increase in the demand for this staple fruit has been remarkable, and fruit men have made special efforts in their endeavor to supply the home demand. The crop was not so large, however, as usual, but the fruit was of good size, highly colored and of fine flavor. The introduction of so many new and valuable varieties has enabled the consumer to have a longer season of ripe berries, and a larger assortment to select from, so that the tastes of all individuals can be better suited.

Blackberries.—The severe drouth came just prior to the period of ripening and at a time when an abundance of rain was needed to perfect the fruit; as a result the crop was a failure, and the unnatural mummified berries remained on the canes and never ripened. The berry patches have been largely cut down, removed and burned.

Raspberries.—A portion of this kind of fruit ripened before the drouth became so general, which were marketed when ripened fruit was needed most. The root rot that worked below the surface of the ground on the plant, and the white scale that attacked the canes, has depleted the patches, in some cases, entirely, as removing and burning is the only alternative.

Ornithology.—The economic relation of ornithology to fruit culture is becoming more and more understood, and it is quite gratifying to the horticulturist to realize that our native birds are at last protected from the egg gatherer, hunter and nest destroyer by our State laws.

REPORT OF THE LAGRANGE AGRICULTURAL AND HORTICULTURAL SOCIETY.

BY MRS. LIZZIE C. ROYER, SECRETARY.

The past year has been a period of activity and gain. The society is only two years old and has a list of forty-four paid members; total number of members over 140. It held six regular meetings during the year and had an interesting program at each meeting and an exhibit of fruit and flowers at almost every meeting. The midsummer meeting was held in the Lagrange County court house yard and Professor Troop and C. M. Hobbs were the speakers of the day. The others were held at the homes of the members. One called meeting of officers and workers was held. It sent a delegate to the Indiana Horticultural Society at Indianapolis, who exhibited forty-two plates of different varieties of fruit; also a delegate to the State Board of Agriculture meeting at Indianapolis.

Several members attended the summer meeting of the Indiana State Society at South Bend. The following officers were elected at the December meeting for the year of 1902: J. C. Grossman, president; J. W. Mills, vice-president; Lizzie C. Royer, secretary; Marion Garmire, treasurer; executive committee, John F. Stough, R. H. Newman, A. J. Seagley; program committee, Mrs. J. W. Mills, R. C. Case, E. E. Royer; library committee, E. E. Royer; membership committee, Mrs. R. C. Case, W. F. Clugston, Mrs. Ocia Eshelman; year book and advertising committee, J. C. Grossman, Henry Eshelman, Charles Royer, J. W. Mills, R. C. Case, R. H. Newman, Benjamin Ruhl, M. E. Horner; music committee, Misses Edith Mills and Nellie Eshelman and John Seagley.

RECEIPTS.

Cash balance on hand, December, 1900	$0 65
Membership dues, 1901	23 50
Premiums of State fair and State societies	8 50
Sale of apples	1 00
License fund	55 00
Total	$88 65

EXPENDITURES.

Delegate to State meeting	$10 50
Printing programs	3 50
Printing receipt book	1 25
Benton Harbor trip	9 00
Express on apples	1 15
Plates	20
C. M. Hobbs, expenses	8 00
Miscellaneous	3 50
Total	$37 10
Balance on hand	$51 55

The society is getting out a year book which will contain names of all members, programs for the year, names of all committees, thirty pages or more of advertising and much other information of value.

The apple crop in Lagrange County was light and a fair crop of small fruits. The season was very dry.

SELECTIONS—MISCELLANEOUS.

HORTICULTURE OF INDIANA.

Indiana is essentially a fruit-growing State. There is no part of its soil that can not be made suitable for the production of fruit of some kind. There are portions, however, that are better adapted to the growing of wheat and corn or grazing, on account of the prairie character of the soil, or the climatic conditions which render the cultivation of orchard fruits a precarious business. By referring to the weather bureau map it will be seen that the mean annual isotherms for the year 1898, and the same will hold approximately for a series of years, are quite irregular in the northern part of the State, while in the southern half they run more uniformly across the State. This is caused very largely by the ameliorating influence of Lake Michigan, felt very perceptibly along the northern counties which are protected from the severe northwest winds; but it is not felt in any appreciable degree as we go down the western side of the State. And so it often happens that the temperature falls lower seventy-five miles south of Lake Michigan than it does in the counties bordering on Michigan. This difference is often great enough to render peach-growing in this section, as a commercial business, out of the question. From the northeastern portion of the State south to the Ohio river, and covering all that territory not already mentioned, the climate is not so severe, and fine crops of peaches are often produced.

FOR GENERAL FARM CROPS.

A line starting near Michigan City and running in an irregular direction, and taking in most of the famous Kankakee marshes, thence in a southerly and westerly direction, finally striking the west line of the State a little north of Terre Haute, will show, approximately, that portion of the State that is better adapted to the growing of general farm crops than fruit. This is not wholly due to climatic causes, but in a large degree to adverse soil conditions. A large portion of this region is flat prairie land, much of it once covered with marshes, but with modern drainage facilities nearly all of this naturally fertile land has been improved until it has become one of the best farming sections in the State. Only occasional spots, however, are high enough for orchard purposes, but small fruits and vegetables grow with the greatest luxuriance, large quantities of which are shipped to the Chicago market.

A region in the Kankakee valley, including Starke and adjoining counties, is famous for its sugar beet productions. The soil here is of a sandy nature, eminently adapted to the culture of this vegetable, specimens having been analyzed which yielded 22 per cent. of sugar, with a co-efficient of 90 to 95 pure.

While there are not many large commercial orchards found in the northern and eastern portions of the State, the soil and climate are admirably adapted to the growing of all kinds of orchard fruits, with the exception of peaches, which are grown only to a limited extent. Here we find a sandy or clay loam, with clay subsoil, which was originally covered with oak, maple, hickory, walnut and all kinds of hard woods found in this climate. The surface is more or less rolling, with numerous small lakes dotting the landscape, thus insuring both soil and atmospheric drainage. In the shallow waters of some of these lakes and marshes the cranberry finds congenial surroundings, and in the sandy districts of Pulaski, Fulton, Kosciusko and surrounding counties the huckleberry grows to perfection.

In eastern Indiana the plum and the cherry are grown more largely than the peach, while the central portion of the State excels in pears. Small fruits are abundant everywhere.

IN THE SOUTHERN PART.

Southern Indiana has a mean annual temperature of from 8 to 10 degrees warmer than has the northern end. With other favorable conditions in the way of soil, protection from severe winds and perfect atmospheric drainage, owing to the fact that the country for the most part is quite hilly, the peach and other tender fruits are successfully grown. Here on the banks of the Ohio river was, until recently, one of the largest peach orchards in the middle west, and even now orchards of from forty to fifty thousand trees may be seen on the "Knobs" in Clark and Washington counties. Here, too, is the home of the "big red apple" (Ben Davis) and the Keiffer pear. The largest Keiffer pear orchard may be seen near the town of Salem, in Washington county. This orchard consists of 12,000 trees. The soil in southern Indiana for the most part is quite different from that found farther north. In a report of the United States geological survey, made some years ago, mention is made of the "white clay lands" which cover a large portion of southern Indiana, Ohio and Illinois, where most of the finest fruit is grown. In Indiana the northern boundary of this peculiar formation, according to the description, begins near Terre Haute on the west and passes more or less irregularly across the State, passing into Ohio near Brookville, Franklin county.

Thus the greater portion of the State south of this line is made up of this white clay deposit. In many places this clay becomes almost a brick red, but the characteristics are, in general, the same whatever the color. An apple orchard consisting of such varieties as Ben Davis, Rome Beauty, Winesap, Rall's Genet and Grimes' Golden, planted on these clays is certain to reward the owner who gives it intelligent attention.

Here is also the home of the pawpaw (asimina triloba) and the native persimmon (diospros virginiana). Excellent varieties of the latter are cultivated to some extent for the large markets, but the industry is as yet in its infancy. Both of these wild fruits offer a wide field for investigation.

This section also includes the famous melon districts, where both musk and watermelons are grown to perfection. Hundreds of acres are grown annually, and the products shipped to the larger cities of the north and west.—J. Troop, Purdue University.

FRUIT GROWING IN INDIANA.

There is no truer saying than that "we know less about the things near us than those far away." The possibilities of horticulture in Indiana are simply wonderful when we begin seriously to study the question of fruit growing.

There is no fruit except the citrus or tropical varieties that can not be grown within her borders with some degree of satisfaction and profit. 'Tis true, there are a few limited areas of country in some parts of the United States that are producing more peaches than we are, and in some instances apples as well, but not because they can do it better or more cheaply, but because their lands have been "boomed" by capitalists, railroads and land agents for all they are worth and people have been induced to make special efforts along these lines. Even granting that special crops can be grown in certain localities to the very highest state of perfection only goes to show that these particular localities are adapted to special crops while Indiana is an all-purpose horticultural State.

NECESSARY TO SUCCESS.

There are a few absolutely necessary conditions to make commercial orcharding a success—these are cheap lands, nearness to large rivers or lakes, air drainage, suitable soils and market facilities. The more of these essential conditions that can be combined the more profitable will be the venture. All up and down the Ohio river there are to be found cheap lands with soils especially adapted to the growing of tree fruits and small fruits as well. In the central part of the State, with Brown county as a center, we find cheap hill lands, a productive soil and air drainage, and here most all kinds of fruit can be grown abundantly and profitably. Then there are the lake regions of the northern part of the State, which are bound to develop some profitable fruit industry when directed aright. These fruit lands will only remain cheap until enterprising horticulturists discover their adaptabilities and possibilities.

Experience a long time ago taught our orchardists that hill or knob land was best suited for growing fruit—that fruit "hit" oftener and was of better quality than in the valley or flat lands. Later on it was demonstrated that cold, damp air flows down hill as readily as water, and when the hills are cut into by frequent ravines, gulches or valleys the cold air is quickly drawn off the hilltops and hillsides and the loss from late frosts or winter heaving is reduced to a minimum, and annual crops may be expected with a fair degree of certainty if the orchard receives proper attention.

Most of our low, flat lands are high-priced because they produce the cereal crops most profitably, but these soils are mostly alluvial and do not contain the mineral elements of plant food in right proportion to give us satisfactory fruit crops. But when we go to the clay lands of the hills and slopes we find full compensation for what was once thought to be the niggardliness of nature. Here we have the conditions necessary to grow the finest fruits the country produces.

Southern Indiana produced the apples that carried off the honors at the recent world's fair at Paris. It was Indiana fruit that captured the best premiums at the Buffalo exposition last season. We were told recently by the largest handler of fruit in the State that Illinois and Missouri might boast of their fine red apples, but Indiana grows redder and better ones. California might grow larger fruit, but it was inferior in quality and looks when compared with the best produced in the Hoosier State.

LACK OF FRUIT.

While there is no doubt but what we can produce the very best fruit to be found in the country, the trouble is we don't grow it in sufficient quantity to even meet home demands, to say nothing of contributing what we might to other markets. From the very best authority we learn that during the past ten years over $10,000,000 have gone to other States for fruits of various kinds. What we need is a general awakening along the line of the possibilities of fruit culture in the State in order that we may have more concert of action among fruit growers. We need more cooperation in fruit growing, and among horticulturists in the fruit sections of the State. When we stop this leak of over $1,000,000 annually that goes abroad to bring in fruit for home consumption, that is not as good as we can grow, and add to it one or two million dollars of fruit to be exported, then, and not tell then, will Indiana take her just rank, which is as the grandest horticultural State in the Union.

But individual effort will be long in bringing about this desirable result. The development of horticulture in Indiana has been a long and continued struggle with little or no State aid. Most of our oldest and best workers have given their long life, time, money and energy to the cause and are now poor. We have their experience, and, to a great extent, it is no longer experimental. What we now need is State aid sufficient to place this experience with every one who owns land that is adapted to fruit growing for commercial purposes.

Many newer States devote yearly fair amounts.for the furtherance of horticulture. Michigan, with nearly half her domain yet covered with the original forest, appropriates $4,000 yearly to horticulture. Even some of the blizzard-beswept States of the northwest, where only small fruits can be successfully grown, make liberal appropriations annually to the cause. Our last legislature appropriated the sum of $1,000 for the use of the State Horticultural Society. It ought to be made four or five thousand by the next General Assembly, which would enable us to develop this great industry and put it on a footing that would bring in millions of dollars to the State, instead of being a tax on our people, as it now is.

With the little means it could command, by voluntary contributions and assessments, the State Horticultural Society has established the only experimental farm in the world devoted to the improvement of the apple, the leader of all fruits. Here the work of originating new varieties is being carried on, in rather a small way, of course, for lack of funds, but this farm is being watched carefully by leading horticulturists all over the world and great things are expected of it.

Another thing we need is more local horticultural societies, extending out into such parts of the State where fruit farming could be made profitable. By these organizations there would be an awakening to the possibilities of Indiana as a horticultural State, our fruit products would be greatly multiplied and millions of dollars annually added to her income.

Meanwhile, it is our duty, as well as it should be our highest aim as horticulturists, to go ahead in all lines of progress, letting our light shine into "the dark places" as much as possible, be ever on the alert in our profession and hope for that reward that comes from good intentions and good works, superintended by good and unselfish motives.—W. W. Stevens.

WHAT BECOMES OF THE NURSERY STOCK?

While 250,000,000 trees were sold by nurserymen last spring only 150,000,000 are alive today, including all planted by fruit growers in past years. This is as nearly as I can quote Professor Bailey's first words before the recent Nurserymen's Association at Niagara Falls. I quote from memory and may not be quite accurate in figures in every instance. Only one in five lives to yield any fruit. Only one tree in sixteen lives at all. Only one tree in one hundred that lives gives anything like good results. The loss of seeds is equally as great. These facts indicate great carelessness or lack of experience in planting trees or seeds, yet the loss is no greater than that which seems to occur to the usual forces of nature, though in nature there is no waste of substance. The robin hatches, say, five young birds each season. If all the young lived, in ten years the increase from one pair of birds would amount to fifty thousand birds; thus the world would be overrun with robins. In nature not one seed in one thousand lives to make a plant or tree, and of those that live not one in one hundred ever reaches the blossoming stage. Not one fish egg of one thousand hatches, and but few that hatch survive long enough to reach mature size. If all the fish eggs hatched, and all young fishes lived, the waters of the earth would become solid with fish, so as to impede navigation.

It is not the fault of nurserymen that more trees sold and planted do not live to produce abundant harvests of fine fruit. Many people who plant trees have not the experience necessary to make them live and thrive. Many planters do not do as well as they know how to do, in planting trees. If every planter made all of his trees live and produce as they might the markets would be flooded. John Burroughs considers the personality of each tree and vine. As we passed over the place he would remark: "This tree or vine needs more pruning, this vine was pruned too closely, that one needs spraying, the other needs having its fruit thinned," etc. He knows the personal need of each. Time sifts out all dross, hence nurserymen should be watchful. If poor varieties are sold they will be discarded later. If you sell poor trees your trade will diminish. The careless planting of trees by the orchardist creates a larger demand from nurserymen. While it is your duty to instruct the fruit grower who plants your products, you are not responsible if that man neglects your advice.—Green's Fruit Grower.

HORTICULTURE IN OUR SCHOOLS.

The necessity of teaching horticulture is becoming more apparent each day. Our young people do not manifest any interest in the subject, which they should. Why? I think it is because their education as directed leads them along other lines. The farmers' sons who have had horticultural instruction are few and far between. The farmer, as a general thing, gives little or no attention to horticultural work, but teaches his children to grow wheat, corn, hogs and cattle, leaving fruit growing to the few specialists employed in this industry. Fruit growing is therefore neglected and will continue to be neglected unless there is an effort to awaken an interest in the minds of the children through our schools.

Just how to do this successfully is an enigma. In Germany they incorporated into the schools textile manufactories, and between 1860 and 1890 we find the spindles increased from 1,699,759 to 2,600,000, almost double her number. The English became concerned at this alarming increase and sent an expert commission to learn the reason of German ascendancy in "textile manufactories." The conclusion arrived at was that textile schools accounted for it.

When a great country like Germany finds it profitable and necessary to establish schools for special purposes and another great country like Britain finds it necessary to appoint a commission to inquire after this state of policy it seems that we might profit thereby, and see to it that our schools are so conducted that both agriculture and horticulture should have a place in an education. True, we have our colleges especially for the instruction of these branches, but they affect only the few. The per cent. of our farmers' sons who secure a college education is far in the minority—possibly not above 10 per cent. By introducing into our common schools these branches would be of incalculable advantage to both the children and the community as well.—Western Fruit Grower.

SUCCESS IN UNDERDRAINING ORCHARDS.

It was the writer's privilege, a few months ago, to inspect an apple orchard belonging to Mr. Lee Goodwin, of Indiana, which had just come to bearing age and presented an uncommonly fine appearance. The trees were twelve years old and uniformly thrifty and symmetrical in form. Upon inquiry we learned that the orchard was thoroughly tile drained. Lines of four-inch tile were laid five feet deep midway between the rows of trees. Mr. Goodwin remarked that he had lost but two trees since the first setting of the orchard, and that the trees had flourished with no backsets from drought or winter freezing. It is customary to select a fine slope or knoll of pleasing contour, if such can be found on the farm, and from such land choose a site upon which to plant the young orchard. Natural drainage is commonly recognized as desirable, and even necessary, if fruit trees are to be successfully grown to a bearing age. If the surface is level and subsoil retentive, as is the case on Mr. Goodwin's farm, as well as over much of the surrounding country, there is no alternative but to use artificial methods of drainage. The disastrous effects of hard winters, requiring the resetting of from 10 to 15 per cent. of the young trees every year or two until the orchard is matured, have been avoided by the drainage of the soil and the care which Mr. Goodwin has bestowed upon his little orchard. It may be here remarked that this portion of the country was once regarded as too level for successful drainage. The abundant growth of all kinds of farm and garden crops, together with the success of the tile factory in the neighboring vicinity, have now thoroughly dispelled such notions from the minds of present land owners in that vicinity. The subject of orchard drainage has not been discussed so freely of late years as formerly, for the reason that the necessity of drainage, either natural or artificial, has been settled in the mind of the practical fruitgrower. It is, however, sometimes overlooked by those who plant but a few trees, and by the small orchardist who has neglected to give attention to all of the details involved in the successful growing of fruit. These details, by the way, are by no means trivial. No better time can be selected for doing orchard drainage than during the fall and early winter months, when the ground is not too wet and when labor can be more readily obtained than in the spring months. The experience of orchardists teaches that the drains should be four and one-half feet or five feet deep. When so placed there will be little risk from stoppage by roots, and, besides this, ample depth gives a more uniform condition of soil than more shallow drainage affords. As early as 1868 Spaulding & Co., of Springfield, Ill., began to tile drain their nursery and orchard grounds. This was done when little was thought of tile drainage throughout the entire country. The results of this work, as noted by Mr. Spaulding fifteen years afterward form an interesting record from which we gather the following:

Mr. Spaulding drained eighty acres for permanent orchard, laying the drains three and one-half feet deep and thirty feet apart. Great care was taken to do the work well. Every line of tile was plotted, so that its location might be definitely known. The grading of the ditches and laying of the tile were done by experienced men. The trees for permanent orchard were set so that the line of drain was midway between the rows. The surface is undulating prairie, with clay subsoil. In no instance have the roots of the trees interfered with the working of the drains. The trees have made strong and healthy growth. Mr. Spaulding claims that drainage promotes the maturity of the wood, both of fruit-bearing trees and of nursery stock. In dry weather the well-known effect of drainage in protecting the common farm crops against damage is also marked in its effect in fruit production. In this instance we have the practical test of the benefits of drainage in fruit culture for a run of years. It has been claimed by the advocates of farm drainage that tile drains improve in efficiency with age. Here the practical benefits have been tested year after year with no rising disadvantage. The open, porous condition of the soil, which admits of the rapid passing away of heavy rainfalls, has been uniform. Mr. Spaulding said that the surface drainage of a piece of land may be good, but long continued rains thoroughly saturate the soil and subsoil, which on untiled land will become compact and settle around the roots of the trees. The channels for the passage of water and air will become closed and remain so until some deep freeze-up lifts the soil again, and the trees will be damaged. Tile drainage provides against any trouble of the kind. The company picked 3,000 bushels of choice apples, while other orchards in the neighborhood, not drained, had but few. In the growing of nursery stock, drained and undrained lands have been used extensively, and in every instance the drained soil has produced the best stock. On drained land the trees have never developed any discoloration of the wood, so common on undrained soil. Mr. Spaulding's orchards number over 14,000 trees, and he says that he has never lost a tree from freezing on land thoroughly drained, but has had occasional loss from other causes. Dr. W. I. Chamberlain, in his book, "Tile Drainage," gives his experience with underdraining orchards on his own farm, near Hudson, Ohio. In summing up the effect of tile drainage, of different degrees of thoroughness, upon the life of the trees, in a period of sixteen years, during which time he replaced the trees which died, he gives the following concise statement: Where tiled both sides of each row, 13 per cent. replaced; where tiled on one side of each row, 36 to 41 per cent. replaced; where not tiled at all, 63 per cent. replaced. It is fair to add that the present thrift and bearing capacity of the trees are about in the same ratio. These are all cases of orchards planted on soils which have clay subsoils. The experience of their owners is given after a test of from twelve to sixteen years, and is a unit as far as demonstrating the value of tile drainage for fruit orchards. With these facts before us, is it not wise to give the closest scrutiny to soils upon which it is proposed to plant fruit trees?

The failure of newly set orchards to grow to maturity without the annual renewal of a generous share of the original setting is a matter of remark by all who have planted trees during the last twenty years. That there are other reasons in many cases for such failure is doubtless true, but from the facts now known it seems certain that thorough underdrainage, either natural or artificial, is one of the necessary requisites of successful orchard growing.—Drainage Journal.

DIETETIC VALUE OF VEGETABLES.

If we would be healthy we must first be wise enough to eat vegetables and plenty of them. These bodies of ours can not be perfectly healthy without them. No one can attain health and high mentality without physical strength. Mother Nature has provided liberally for her children. It remains for us gratefully to accept the largest of her gracious guardianship.

Parsnips and salsify are highly nutritious if used in season. There is danger in eating parsnips very late in the spring. After they begin to sprout they acquire an acrid taste and are poisonous.

Potatoes, both sweet and white, are allied to several powerful narcotic plants, as well as to other esculents, such as tomato and eggplant. Potatoes consist almost wholly of starch, and accordingly deficient in nitrogen, and illy adapted for an exclusive article of diet; though, as an accompaniment to other heavy foods, they are very healthful.

The squash has great food value. Its properties are similar to those of the sweet potato. The carrot is a moderately nutritious food, with the same properties when used internally as when applied outwardly in the form of a poultice, allaying inflammation. Its chief value is in the form of a digester. It contains pectic acid, which acts upon other foods in a manner that dissolves them, and so promotes digestion. It is said that the frequent use of carrots will bring brilliance to the eye, smoothness and gloss to the hair, and clearness and color to the complexion.

The cucumber and muskmelon possess remedial qualities for rheumatism. Their juices are also valuable as an emollient for the complexion, in the form of lotions, cold creams or pomades.

The young shoots of asparagus have from remote time been held in high repute as a culinary vegetable owing to its delicate flavor and diuretic virtues. The ancient Romans served it at their most elegant banquets. No vegetable is more favorably known as a cleansing agent of the kidneys.

The cabbage family, of which there are many branches—namely, Brussels sprouts, one of the most delicate of table vegetables; the common drumhead, of which sauerkraut is made; the red cabbage, excellent for pickling; cauliflower; broccoli, a variety of cauliflower; broccoli sprouts and kale; besides numerous other varieties unfit for table use—adapted to the needs of animals. All contain a large percentage of nitrogenous compounds as compared with other articles of food. They are a mental and physical tonic, but unless eaten very fresh are difficult of digestion, and have a very decided tendency to produce flatulence.

The common bean is more nutritious than wheat. It is, however, a rather coarse food and difficult of digestion. Wax and butter beans, when cooked tender are wholesome and nutritious. The Dutch and Germans recognize their virtues and preserve large quantities in salt for winter and spring use. Peas are equally as nutritious and wholesome as beans. Very few appreciate the value of dry peas in a puree.

The watercress is a pungent stimulant with anti-scorbutic properties. Nasturtium pods have similar attributes to the horseradish and watercress. The medicinal qualities of the radish stimulate, cleanse and tone the system. Lettuce is especially healthful, because so easy of digestion. Added to these are laxative and soporific qualities, which make it a valuable salad for nervous people. Okra has a soothing effect upon the system.

Laxative properties are found in parsley. Spinach exerts a strong influence over the lungs and liver. Its seeds are often prescribed in the Orient for inflammation of the liver and to relieve difficult breathing.

The purgative properties of the onion recommend its frequent use to cleanse the general system. It especially promotes discharge from the mucous membrane of the lungs and trachea. Horseradish is a good local stimulant and a mental and physical tonic. Its frequent use will relieve a tendency to dropsy, and it contains properties that are beneficial to chronic rheumatism sufferers.

Rhubarb is a most efficient stomachic. By its use the stomach is strengthened and incited to healthy action. Its censorship over improper diet is important and beneficial, inasmuch as its laxative qualities cleanse the system of much effete matter.—Orange Judd Farmer.

THE FORMING OF FRUIT BUDS.

Often the question is asked, in what time of the year do such and such trees and vines form fruit buds?

Strawberries develop fruit buds in the fall for the next year's crop. Raspberries, blackberries, grapes and almost all of what are called small fruits form fruit buds in the spring. Apple trees and most all other trees form fruit buds in the fall, mostly during the months of July, August and September, owing to the season. In dry weather they will form buds earlier and often change fruit buds when not fully developed into leaf buds. Again, if trees get injured by rabbits, mice, borers, by too deep plowing or by plowing too close to the trees, thus cutting the many roots, etc., their growth is checked and their vitality injured, which causes the tree to form fruit buds. A tree very badly injured may leaf out in the spring, bloom very full, may half mature the fruit and die. Then most people are ready to say that the tree bore itself to death, when the death-blow that nearly killed it outright fell months before.

How to Make Trees Bear.—Apple trees six years old or over that do not bear nor develop fruit buds may have their growth checked. Watch the progress of the tree. After the leaves are fully grown is the time to check the growth to cause the formation of fruit buds. Different modes are practiced: Twisting a small wire tightly around the limbs, which must be removed in about six weeks; girdling by cutting or peeling a band of bark off one or two inches wide; pruning; stopping cultivation, or sowing to clover. The same applies to peach, pear, cherry or plum trees. I have seen peach buds form in the spring, but this is a rare case.

How to Grow Fruit for Exhibition.—When fruit is about one-third grown select limbs that have the best fruit. Pick off all except two or three specimens—only one is better. Twist a wire around the limb just below the fruit. This checks the downward flow of sap by pressing the bark, throwing the food back and the fruit appropriates it, causing an abnormal growth and speedy maturity. This may seem unreasonable, but trees take in their food from the soil—minerals dissolved in water—which passes from cell to cell through the center of the trees until its leaves are reached, where it is digested, so to speak, and is combined with carbon from the atmosphere, and the sap food passes downward immediately under the bark, building up the wood cells and nourishing the fruit.—Exchange.

CROSS POLLINATION OF ORCHARD FRUITS.

Although the theory of the importance of having some of our orchard fruit crossed in the blossom from the blooms of other varieties of the same species, to obtain better crops or better fruits, was not propounded very long ago, it has attracted much attention, and has been generally adopted by the leading horticulturists, because it gives a reasonable explanation of many problems that have been more or less difficult of explanation before.

When a man planted a commercial orchard of one variety that he thought to be productive and in good demand in the market, he could not understand why his trees should not yield as well as those of his neighbor, who had the same kind in a little orchard of a half-dozen varieties, intended more for home use than for market. When a tree bore a good crop on one side and set no fruit from an equally good bloom on the other, it was not easy to assign a reason for it, and when two scions from the same tree were set upon similar stocks of bearing trees in different orchards, and varied much in quality or amount of fruit, it seemed unaccountable as it did when an old orchard had all but one or two favorite ones cut down or dug out, that the trees left should cease to be productive.

But when this question of cross pollination began to awaken attention about ten years ago it furnished a probable solution of all these puzzling questions. The absence of other varieties near the trees that failed to fruit explained those cases, while if the pollen was distributed by a strong wind there would be a reason why it should take effect upon the windward side of the tree and fail to reach the leeward or the center. If bees or insects distributed they would be more impartial, or a change of wind might bring pollen from another tree to the other side.

We do not remember which was the first to publicly publish literature upon this subject, Professor Bailey, of Cornell Experiment Station, New York, who devoted his study of it mostly to plums, or M. B. Waite, of the Agricultural Department at Washington, who studied pears more, and apples to some extent, but we think the theory had been advanced by a few of the leading horticulturists before either of them published anything on the matter, and with them it was rather a theory than a proven fact.

Since that time many have devoted themselves to studying these conditions, not only regard to plums, pears and apples, but to many other of our orchard fruits, and they have prepared lists of such varieties as are adapted for cross pollination or fertilization of blossoms, and much other information upon the subject that is likely to prove valuable to those who have planted orchards, or intend to do so. The list is too long, and yet not sufficiently complete for publication in a newspaper article at this time, but one or two general rules may serve as a guide. It is of the first importance that the two varieties selected for cross pollination should be in bloom at the same time. This is most especially necessary in those which retain their blossoms but a short time, as the plums, and with the apples there may be a variation of a few days, as the blossoms remain much longer.

It is also beginning to be realized that some, if not all, are better pollinated by varieties that are closely related; as one by another that is a seedling of it, and that, as in grafting, if the characteristics of the fruit are to be retained in the entirety, the stock should not vary in character from the graft, as the tree selected to furnish pollen for the blossoms of another should not vary much in its general character from the other.

Naturally, from this it follows that the character of the fruit may be modified by the pollen of the tree that stands near it, as some are by the stock the scion is set in. It may be made earlier or later, a better keeper, larger or smaller, more or less sour, according to the character of the fruit whose blossom furnishes the pollen. There is a chance for much study in this matter before a full knowledge of the subject can be gained, and private orchardists should investigate the matter and give the result of what they can learn by observing results where they have two or more varieties near together, and perhaps those who have but a few trees for a home supply of fruit may be able to do more than those who have larger orchards with less varieties or greater distance between the different varieties.

Probably very few of our trees are entirely sterile or barren when standing alone. We do not know that any, unless it may be some of the plums and grapes, have what are called in the strawberry imperfect blossoms, those of one plant being all pistillate or feminine, fruit-bearing blossoms, and the other all staminate blossoms furnishing pollen to fructify the others. In fact, this condition is very rare in strawberries, there being few entirely barren when grown alone, though practically so as far as profitable production goes.

In the plums more than in any other of our orchard trees have been found defective blossoms. In some the pistil, which should form the fruit, is entirely lacking. These will be always barren, at least if all the blossoms are so. In some the stamens and pistils do not develop at the same time, or the pistils are longer than the stamen, so that the pollen from that blossom can not reach it. These can only become impregnated by the pollen from other flowers.

While in some cases, as we said before, the wind conveys the pollen from one tree to another, this is but an uncertain method, as it "bloweth where it listeth," and neither time nor direction can be depended upon. Bees are more reliable, but when there are many bees of one variety in a solid block, they may for some reason limit themselves to that variety alone, and thus not carry to it any pollen from another variety, though it is but a little distance away. This is probably also true of other insects. The pollen of apples, pears and plums is sticky and does not move much with the wind, yet with apples and pears the pollen is so abundant that three or four rows of one kind may usually be safely planted, especially if bees are kept near them. Some would say two or three rows of plums, but we should feel more sure of fertility if each row was of a different variety from that next to it.

The nearer the fruit comes to a natural state, or as a seedling, the greater the chance of its being self-fertilizing, or having a perfect flower, and thus trees standing alone, that have not been grafted, often bear heavily. If it is desired to graft such a tree a few of the top branches should be left untouched that they may furnish pollen for the blossoms on the graft.

We used to know as a boy wild grape vines that blossomed full, and were very fragrant every year, yet never bore a grape. They were known as "he" vines, but we were not able to tell then whether the blossoms were strictly staminate or not, and we were more interested in locating the vines that bore good grapes than in those that had none. Cross pollenization between two different species, as the pear and apple, may occur, but we have no authentic proof of such cases.—American Cultivator.

POTASH IN FRUIT CULTURE.

As far back as my recollection extends, the orchards of southeastern Ohio were situated on the river bottoms. On the Muskingum and the Ohio rivers the earliest orchards were planted on the first plateau, which is generally not more than 10 or 12 feet above the low water mark. The soil of this plateau was originally very rich; it produced aspens, beeches, poplars, and occasionally a Carolina poplar. But trees growing in this rich alluvial soil were soft-wooded and did not make durable timber.

The apple trees on these bottoms grew to an enormous size. I remember an Early Chandler which, I think, was 60 feet high. An apple falling from the top and striking the hard ground would burst to pieces. Neither did the apples keep well. There was too much vegetable matter in the soil. Our Putnam Russets seldom lasted through February. The old orchard served a good purpose in its day by protecting the houses on the bend from broken ice in the spring flood. But the soil it occupied was valuable for corn, the old trees were cut down and their stumps, though often two feet through, rotted out of the way of the plow in about five or six years.

The second orchard had been planted on the slope of the fourth plateau, a yellow clay loam; and it came to be a matter of remark in the family that the apples from this kept better in the spring than those from the old orchard. The fruit was better flavored. We did not know much about potash in those days, but we knew that a Rome Beauty tree, planted on the inside of an immense hollow walnut stump, where the soil had been enriched with ashes, produced exceptionally fine, hard, long-keeping apples.

Later on hogs were allowed to run in this orchard the year around. They rooted it so energetically that sometimes laterals six inches in diameter were wholly above the surface. The vigorous rooting, the destruction of all unsound and wormy fruit, and the heavy manuring, made an enormous yield of fine, smooth, large apples every year. But again it became a subject of remark that they were not keeping as well as they should; they were too much like the apples from the old orchard in that respect. They were receiving too much animal manure. The trees grew too rankly, their wood was too soft. One night a cyclone went through diagonally and cut a narrow swath clean; every tree snapped like a pipe-stem. They had needed potash to make them hard and to make the fruit long-keeping and give it character. But even then we had no clear idea what the matter was, and we decided on one more removal.

The third orchard was planted quite off the river plateaus, 300 or 400 feet above the river level, on a hill of which the north side was very red clay and the south side yellow clay. The trees on this south slope were planted among the ledges, we sometimes used the crowbar in making the holes and scratched around for enough fine earth to cover the roots. As the roots grew they wormed in and out among the stones and sometimes could not find earth enough to hide themselves in. The soil was largely decomposed rock. It was pretty thin and the trees grew low and wide, only half as high as those on the red-clay side. On the poorest stony knobs we applied the ashes of the burned brush heaps. But the fruit was choice; it was the finest that had ever been produced on the farm. On these river hills, so steep that we had to roll the barreled apples diagonally down hill to get them to a wagon road, the fruit was far superior to that grown on the rich river bottom. It had character, did not take so much sugar in cooking, had a firmer texture, kept better, had a higher color.

It is pretty safe to assume that potash was the principal element which so differentiated the apples of the river bottoms from those of the hills. The first plateau, being of recent formation, is largely silt or decomposed vegetable matter carried down in the water of the river, and therefore bearing a low percentage of potash, as shown by the fruit trees growing there. But in all heavy clay uplands there is from 0.5 to 0.8 per cent of potash, which is sufficient to influence very materially the quality of timber and fruit growing on it.—S. Powers, Ohio.

BUDDING FRUIT TREES.

The difference between grafting and budding fruit trees consists principally in the amount of material used; the result being the same. In grafting, a piece of a branch with a number of buds is inserted into another branch, while in budding only a single bud, with a little bark, and perhaps a little adhering wood is used. This bud is inserted under the bark of another tree and upon the face of the newly growing wood. This operation must be done while the stock is in a state of vigorous growth, or while the sap is flowing freely, so as to allow the bark to peel readily. The exact date depends upon the kind of species of tree to be worked; beginning with apples and pears and ending up with peaches. Frost sometimes catches the budder before finishing the peach stocks.

There are various methods of inserting buds, but the one commonly practiced is done by first selecting a smooth spot about two or three inches above the ground, and then making an incision lengthwise through the bark of the stock an inch and a half or two inches long, and then a small cut at right angles across the top, the whole somewhat resembling the letter T. A bud is then taken from the present season's growth by shaving off the bark with the bud about an inch in length. A small amount of wood will adhere to the bark, and this may remain if it is not too old to allow of the parts uniting readily. The corners of the bark at the T are then raised slightly and the bud pushed well down underneath the bark. A bandage, consisting of ordinary wrapping string, or raffia, which is commonly used, is then wrapped around it, covering the parts both above and below the bud, giving it just pressure enough to keep the inserted portion closely to the stock, but not close enough to check circulation.

The shoots from which the buds are cut should be quite firm in texture. The leaves should be immediately cut off to prevent evaporation, leaving a quarter or half inch of the foot-stalk to serve as a handle in placing the buds. In ten days or two weeks they should be examined, and if string has been used in tying, it should be cut in order to prevent choking the bud. If union has taken place, the bud will appear fresh and green, although it should remain dormant until the next spring, when the stock is cut off a short distance above the bud and the whole vigor of the root thrown into the new bud which is to form the tree, and which should grow from one to three or four feet the first season, depending upon the kind of tree.

The points to bear in mind, then, in successful budding, are: first, a thrifty, rapidly growing stock, so that the bark will peel freely; second, the proper time, not too early until some growth has taken place, and not so late that the bark will not peel; third, healthy buds sufficiently matured; fourth, a sharp knife, so that the bud may be shaved off smoothly; and fifth, the application of some ligature firm enough to cause the bud and stock to fit closely.—J. Troop, Purdue University.

ADVICE TO BEGINNERS.

There are none who see brighter visions in the future than the beginner in fruit culture, and there are none who get a taste of higher flavor, of the bitter ashes and sour apples than he. A good start is always counted as half of the battle, whether it may be with guns or apples. As a fact of history, you may set it down that the starter in fruit growing, at the end of a few years' work will be wiser if not richer. The beginner in fruit growing should know his land and location. His land must not be poor, and his location must be not in a swamp or on a dry, poor hillside. Tree or vine, or cane, fruit will not grow and do well if it is not properly situated and properly fed. After you have got and prepared a place for your fruit home and farm, then comes the preparation of the soil. Have it rich enough with plant food to feed and keep fat the crops you plant. No little bird or big book can tell you what to plant and when to plant. You must learn these things largely by observation and consultation.

To raise fruit and succeed, the man that does it must love fruit; not merely for the money in it, but the good eating in it. The man who loves fruit because it is good to his taste is best to raise fruit to sell. The man that loves his wife makes a good husband. The man who loves fruit can make a good fruit raiser. No matter connected with fruit growing is more important than the selection of varieties and kinds. Apples won't grow south of the Georgia line and oranges won't grow north of the Florida line. Take a hint right here—it is not safe for the beginner to depend on nursery catalogues, or even State society reports. This matter of fruit raising is to be largely determined by location, soil, climate and brain and brawn of the man behind the plow and at the end of the hoehandle. The fact is, I have been a beginner for over thirty years, and am yet a beginner, from the fact that there is more that I don't know than I do know. The man who may say, "I know all and enough," is a fool or a liar. The orchard, the garden, the vineyard and the truck patch is open to the beginner. This makes a big field to cover with elbow grease and head work. The world must have fruit and they get it, but the producer oft at the season's close, goes and sets down at his fireside with a heavy heart and a light purse.

The beginner should be very careful in the selection of varieties. For myself I can say that thirty years ago I planted a thousand pear trees of more than a dozen varieties, and not over one-fifth paid for planting in fruit. I will say this: That I know of no other business that has as much pleasure and as much fun and hard work and as little money in it as fruit growing. This don't apply to all sections of our big country, but to sections only where the business is not properly organized and conducted. When I was a "starter" thirty years ago in fruit raising I consulted the books, catalogues and my neighbors as to what I should plant and how to plant it, and care and cultivate; but I got such mixed advice and such questionable information from print and talk that for several years my income was more from experience than money. Experience brings knowledge, and maybe wisdom, and the man who lives and don't learn is an odd count, and a misfit, and should not go into the fruit business to make money.

Whether you start to raise fruit for market or home use, have a care of the tree peddler, for he has fooled people from Adam's day to this day. Get your trees and plants from your nearest nurseries, if reliable. If you do this you will save money and disappointment and trouble.—W. Cook, Rural Neck, Ky.

MAINTAINING FERTILITY OF FRUIT LANDS.

The cowpea is a good crop to add fertility to the soil. It is a summer crop, a bean and a very tender one. It should not be planted until the ground is thoroughly warm or until late corn planting time. It is the strongest growing legume and will sprout and grow in any soil, no matter how poor. Broadcast one bushel per acre or drill in one-half bushel or less of seed. Plant with a bean or seed drill in rows two and one-half feet apart. The cowpea will grow wherever corn will grow. It may not mature, but the early varieties will nearly do so. The Little Black Whippoorwill or New Era will manure in this latitude if planted in June and will make green pods by frost, if planted in July.

Buckwheat is not a nitrogen gathering plant, but will add a good deal of humus to the soil. It should be sown late after cultivation has ceased. It makes available a lot of plant food already in the soil. Turnips are another good crop to add humus to the soil and will thrive where it is not too shady. The soy bean takes about as much time to mature as an ordinary corn crop and is somewhat later than cowpeas. If sown early in June, they will mature a good crop of seed. The pods all mature at the same time, but when the plant is ripe the stalks are as hard as hickory brush. It will not do as well in the shade as cowpeas.—H. E. Van Deman.

HEADING YOUNG APPLE TREES.

There seems to be an increasing desire for information as to the better ways of heading young apple trees. So says the writer, in Rural New Yorker. The practice of some has been to head them from four to five feet high in the eastern States, that it may be possible to drive teams under the trees in cultivating the land about them. But there seems to be a change gradually coming over the orchardists of that region in some degree, and the tendency is for lower heads. In the central and western States there is much less of this practice, and, perhaps, because of the more intense and longer continued sunshine and the more advanced ideas that prevail. The reasons for low-headed apple trees are properly stated about as follows: The lower the heads the less purchase the winds have upon the roots, and the less liability to leaning and blowing over. The lower they are the more easily and cheaply they can be sprayed. The same is true regarding pruning. The fruit on low-headed trees is easier to gather than on those with high heads. On the other hand, the lower the branches the greater difficulty there is in tilling the soil under them, but there are tools made with extension frames that largely obviate this. Another very important matter is the form of the head. Some have held to the theory, and practiced it as well, of training the tops into vase form, or at least with very open heads. It is often that the main branches all diverge from one point, and sometimes the entire weight of the top comes upon one or two forks. This occasionally causes splitting and consequent loss or very serious injury to the trees when loaded with fruit or sleet. These open heads are likely to induce the flat-headed borer to work upon the large branches, where that insect abounds, and sometimes sunscald is also invited. The more approved form is that which approaches the pyramid style. This requires the main branches to come out on all sides and continually, from a central stem. This divides the strain on the branches and forks and gives better opportunity for the air and light to reach all parts of the tree than where the branches come from one place. The manner of growth of a pine tree should be the ideal, although this is not possible to attain entirely, because of the natural difference in the habits of growth of the pine and apple; but it should be approached as nearly as possible. There is rarely any danger of getting the central stem too tall, for the natural tendency is for it to stop and be merged into the spreading branches. If any tendency to too high a center should appear it is easy to check it by cutting back the stem. As the tree approaches bearing age the upward growth becomes less pronounced, and there is little occasion with most varieties to head back the top. The weight of fruit also tends to hold back and spread the tops of old bearing trees. One of the main points to be most carefully and faithfully guarded is the proper forming of the head while the tree is very young. If the orchardist is able to understand his trees and forsee their future shapes he may avoid much cutting of large branches when they get old. To be able to do this one must know the peculiarities of each variety he plants. Some will need higher heads than others, and different training. When trees are first set the future form should be in the eye of the planter, and such branches as will finally be out of place should be cut off at once. In no case nor in any climate should the stem of an apple tree be cut out, but it may be cut back moderately, to correspond with the outer branches, which should also be cut back from one-third to one-half. Direction can be given to the shoots at the ends of these cut branches by being careful to have the last bud on the side toward which it is desired to grow. The more severe the cutting the stronger will be the succeeding growth. During the first few years of the life of a tree the rubbing out of sprouts and cutting away of small branches that are not needed will have a very beneficial effect upon its after life. Train up a tree in the way it should grow, and when it is old it will not be far from what it should be.—H. E. Van Deman.

WASH FOR PEACH-TREE BORERS.

Professor Smith, entomologist of the New Jersey Experiment Station, reports satisfactory results with cement and milk applications against the peach tree borer. All the peach trees in his experimental orchard have been treated since they were first set with one or two annual applications of hydraulic cement mixed with skimmed milk. Enough cement is added to the milk to make a thick wash, which is applied with a brush. The soil is removed from the crown, which is examined closely to see if any borers are in the tree. The application is made to cover the trunk nearly up to the branches. After the cement has set thoroughly, the earth is turned back around the trunk, so that about two inches of the cement covering is below ground. This application has been effective. Hardly any borers have been found after the first year, and that this is not because there are no moths about is proved by the infestation of trees in neighboring gardens. Where only a few trees are to be protected, or where the trees are young, Professor Smith says he knows of nothing that is more satisfactory. It is easily applied and lasts the entire season. A little judgment must be employed in getting the mixture to a proper thickness; but if one coating does not seem sufficient, it is easy to apply a second. The trunks should be wet when the application is made, because the cement sticks better. Milk is better than water for mixing because it gives a more flexible covering. It does not crack or split off as easily as when water is used. On small trees the application costs very little. On larger trees it is much more expensive than newspaper coverings and not so effective.—Western Fruit Grower.

SPRAYING FOR THE SAN JOSE SCALE LOUSE.

Various mixtures have been proposed for this insect and a number have been found to be more or less effective. It is hardly possible, however, to apply any remedy with such thoroughness as to reach every scale, and because its natural enemies are few and its rate of reproduction very rapid, complete eradication is practically impossible, but by treatment each season it is entirely practicable to hold in check. The choice of a compound with which to make treatment is not to be determined alone by its efficiency, but by its availability and practicability as well. Resin washes, composed of resin, potash and fish oil, have been found to be efficient, but are troublesome to prepare in a small way. The same is true of a white wash made of lime, sulphur and salt. Whale oil soap, when used as strong as two pounds to a gallon of water and applied with thoroughness, is a good remedy. Its cost precludes its use in many cases and the difficulty of finding suitable weather conditions for the application of it make results with it quite variable. While not without objections, crude petroleum has been found, in most cases, to meet the requirements better than any other remedy yet tried at the Ohio Experiment Station. The thin, light grade is safer and less troublesome to use than the thick, heavy grade, although when diluted with water the latter is less objectionable than if used clear. Refined oil is more harmful than crude.

Good results have been secured in spraying scale infested trees with 25 per cent. of crude petroleum and water, also with higher percentages of oil. Trees have been injured and even killed with 25 per cent. of oil. On the other hand, many thousands of trees, in all parts of the country, have been sprayed with clear crude petroleum and with various percentages, without injury. The manner of spraying has much to do with the effect upon the tree. When the material is applied in such quantities as to run down the limbs and bodies of the trees injury is almost sure to occur, even if the oil is diluted with water. Sometimes the operator, trusting to dilution to prevent damage, sprays excessively, or until the mixture runs down to the roots. The oil is thus unevenly distributed and unknown quantities reach certain parts of the tree, resulting in local injury. Peach trees are very tender and should be sprayed with more than ordinary care. If whale oil soap is used the work should be done just as the buds are swelling. The only safe way is to stop spraying before the material begins to run, and this rule applies to diluted as well as to clear crude petroleum. With a suitable pump, 25 to 50 per cent. crude petroleum can be used safely and economically, but if this pump can not be relied upon to give accurate percentages, then clear crude petroleum may be applied with any pump. A nozzle which will give a fine spray is needed in all cases. Choose a day for spraying with crude petroleum when evaporation is rapid, as greater injury is done in damp than in drying weather. If the sun shines and the wind is blowing all the better. A light wind is not advantageous, but a brisk or high wind assists operations materially. When there is no wind begin at the top of the tree, spraying around the tree and work downward rather than upward. Avoid double applications, such as may result by spraying up and down the tree. If the wind is brisk hold the nozzle high and let the material drift through the trees. In this way trees some distance away may be covered almost as well as those nearby. The operator must shift his position and change the height of the nozzle as experience shows to be necessary. When the wind changes another application must be made on the other side of the trees. There is less danger of overspraying in a high wind than when the air is calm, but there is also a greater probability of missing parts of trees. In early spring, just before the buds open, is the best time to spray, although no harm may be done if the work is performed earlier. The work can be done much better if the trees are first severely pruned by cutting off the ends of the branches. In case trees are seriously infested this operation is necessary in order to secure good results, after removing one-third or one-half of the top. Peach trees will endure very close pruning and no harm will be done if the top is all cut away and a new one started. Close pruning also assists the trees to recover from the weakening effects of the scale. It is seldom advisable to destroy trees because of infestation, but it is usually better to prune and treat than to dig out, because new trees put in place of the old ones would soon become infested.—W. J. Green, Ohio Experiment Station.

VALUABLE REMEDY FOR CODLING MOTH.

The spraying experiments here noted were made upon Winesap apple trees about eighteen years old and from fifteen to twenty feet high. Just before they blossomed the trees were sprayed May 4 with Bordeaux mixture. The next two sprayings, those in which poison was used, were made May 15 and May 20. The first just after the petals dropped and the last just before the calyx closed. In both experiments the poisons were used with Bordeaux mixture, made by the 4-6-50 formula. Five trees were left untreated. All the trees had been sprayed regularly for many years. The season was a severe one for a test of remedies. In 1900 there was a good crop and plenty of codling moth; while in 1901 there were practically no apples on the peninsula. As a result codling moths concentrated largely in orchards bearing fruit. Five trees were sprayed twice with arsenate of lead, known also as disparene. Three were sprayed once only, May 15, with disparene. Five were sprayed with paris green, one pound to 150 gallons Bordeaux. The droppings were carefully collected and both good and wormy fruit counted during the season.

The number of perfect droppings is approximately the same on all trees. One spraying of disparene was as effective as two of Paris green, while two of the former were much superior to the latter. This seems to be very largely due to the superior adhesive qualities of disparene. It stuck to the leaves all summer although we had unusually numerous and severe rains. We have carefully gone over the records of previous experiments, and considering the unusual number of codling months present, the check trees having 60 per cent wormy for the whole season, we believe that the results secured by two sprayings with disparene are the best that have yet been secured in any similar experiments.

The two sprayings with disparene resulted in reducing the number of windfalls a half and increasing the perfect picked fruit by 18 per cent. over those sprayed but once. A benefit of 87 per cent over the unsprayed trees was thus secured as regards wormy fruit, there being but 7.8 per cent. wormy during the whole season, and but 4 per cent. of those picked, and a benefit of 77 per cent. as regards windfalls. The labor and Bordeaux mixture for each spraying was a trifle over 2½ cents per tree, including the disparene. Where Paris green was used, the cost was about 2¼ cents per tree. Disparene can be made at home. It costs about 15 cents in one hundred-pound lots and about 20 cents in five-pound packages. It was first used in Massachusetts against the gypsy moth.—Orange Judd Farmer.

[Arsenate of lead or disparene, mentioned in Professor Sanderson's article, can be easily made on the farm if desirable. The constituents are (1) arsenate of soda and (2) acetate of lead. When combined they form the arsenate of lead. Dissolve four ounces arsenate of soda in three quarts water and eleven ounces acetate of lead in another three quarts water. It dissolves readily and can be diluted either with Bordeaux mixture or water. In either case about one quart arsenate of lead should be used for each twenty or twenty-five gallons Bordeaux or water. It should be mixed as used. It can be used much stronger without danger to foliage, even on peach and plum. In this respect it is superior to paris green and other arsenical poisons, as it does not burn the foliage. As a rule the formula given will do for most leaf-eating insects, and the codling moth. Where rapid work is desired the quantity can be doubled; that is, use two quarts or even more arsenate of lead in twenty to twenty-five gallons solution. Arsenate of lead does not dry, but forms a pasty precipitate almost pure white. It remains well in suspension and does not need the constant agitation required in Bordeaux or water where Paris green is used. Usually arsenate of soda costs about 8 cents per pound and acetate of lead about 14 cents. In other words, when these chemicals are combined, arsenate of lead costs, when homemade, about 14 cents per pound.—Ed.]

ROOT ROT OF FRUIT TREES.

The Oklahoma Experiment Station has published a bulletin summarizing an investigation of a serious root-rot disease which is destroying many fruit trees in the orchards of the State. The disease has been noticed in many localities and seems to be confined to lands that have been cleared of timber before planting to trees.

The symptoms of this disease are so characteristic that no one should experience any great difficulty in correctly diagnosing any suspected cases. Perhaps the most characteristic effect of the attacks of this fungus is the great exudation of gum about and from the crown of the diseased trees. This flow of gum occurs in maple, peach and cherry trees and is reported for the apricot tree. It frequently happens that the amount of this gum to exude is so great that it unites with the soil about the base of the tree to such an extent as to form a mass of cemented soil about the tree. In many cases this mass of gum-cemented soil will become hardened to form a sort of cast about the crown and larger roots of the tree.

"The yellow coloration of the leaves is usually one of the prominent symptoms of the disease. In many cases, however, the leaves wilt rapidly during the growing season instead of becoming yellow. This rapid wilting of leaves is the first external evidence afforded that the root system of the tree and consequently its absorptive ability have been greatly reduced.

"The groups of mushrooms found about the base of the trees will afford the most positive evidence of the presence of this disease. But unfortunately this evidence comes too late for the application of any remedial agent; for the mushrooms seldom appear about the crown of the tree until the disease has so far progressed that no preventive or remedial measures can be applied.

"The fungus of this type is well provided with means to insure its rapid distribution throughout large orchards. The spores, that are produced in such large numbers, are easily scattered about and each one may, under proper conditions, give rise to a mycelium and the typical sporophores. Perhaps the beetles that are often seen eating the old pilei are of some value in distributing the spores, but this point needs some further investigation.

"The most fertile source of infection is certainly found in the several sorts of mycelial strands produced by this fungus. The subcortical mycelium is an old stump or even a diseased tree may give rise to the purplish-black rhizomorphic strands, and these will grow out in the soil to a considerable distance. In one case the author was able to trace these subterranean strands for a distance of about ten feet from a partially decayed oak stump. One of these same strands was followed, at an average depth under the surface of the soil of ten inches, where it was found entering the cortex of a living 'Ben Davis' apple tree. None of the other roots of this tree were diseased, and it was plain that the first entrance of the mycelium had been made at this point, out on one of the smaller roots at least six feet from the trunk of the tree.

"Though the first entrance to the tree is generally made by the mycelium through the cortex of a small root, yet cases were found in which the mycelium had evidently entered the crown of the tree first, and then spread out through the smaller roots and up into the trunk. As a rule, the mycelium does not grow up in the trunk above three feet from the crown. In fact, in many cases no trace of the mycelium can be detected in the trunk more than five or six inches above the crown.

"The greater part of our knowledge concerning the proper remedial measures to be applied against this and other wood-destroying fungi is derived from the wide experience of the foresters of Europe. Among the strictly remedial measures none are of greater importance than the isolation of diseased trees by ditching. If a single tree in the middle of the orchard is found to be diseased, a ditch should at once be dug around it to prevent, if possible, the further spread of the disease by the subterranean mycelial strands. This ditch should be dug at a distance of about ten feet from the tree, i. e., with a diameter of about twenty feet. The ditch should be about one foot wide and about two feet deep with vertical walls. The same measures are to be adopted to protect a group of diseased trees that are found in the orchard. In this case the ditch may be dug so as to include all the trees in the group. It is possible that the burning of brush in this ditch will kill the rhizomorphic strands and prevent further spreading. So far as the author is aware this method has never been practiced to any great extent in America, though in Europe it seems to have proven effective in combating this and similar diseases.

"It can not too strongly be insisted upon that all fruit trees that are found to be diseased should at once be removed from the orchard. Care must be taken in such cases to remove and burn not only the trunk, but all the larger roots and especially all those diseased. Perhaps a tree will bear salable fruit after the mycelium of this fungus has entered its root system, but it is a near-sighted system and poor business to allow such a tree to stand when it is remembered that thereby all the other trees in the orchard are being endangered.

"Too great care can not be taken to avoid cutting or otherwise injuring the roots of the trees by plowing or other cultivation. Though the mycelium of this fungus is able to enter the cortex of perfectly healthy roots, yet its progress, as well as its entrance, is greatly facilitated by wounds of any character. In one of the orchards visited by me last fall it was apparent that in some cases the mycelium of this fungus had first entered the roots through wounds made by the plow in cultivating between the rows.

"Attention has frequently been called to a practice among some fruit growers of placing in the bottom of a hole, in which they are about to set a tree, a quantity of chips from their wood pile. In many of these chips there are sure to be found some of the mycelium of this fungus and the introduction of the disease into the orchard is the result of this practice in many cases. For it is a well-known fact that each small piece of mycelium of this fungus is capable of remaining dormant for long periods and of again producing, when placed under proper conditions, the mycelium and even the normal sporophores of the species.

"It was early found in these investigations that the disease was largely or entirely confined to those orchards that were planted on recently cleared timber land. In fact, the disease has never been reported in this State from orchards planted out on real prairie soil. Subsequent investigations have afforded abundant proof that the fungus described in this bulletin is common as a parasite and also as a saprophyte on various species of oak in this State.

"Old oak stumps or even dead oak roots remaining in the soil are apt to become fertile sources of the infection of the healthy trees planted in that same soil. From the above it follows that it is the part of wisdom to remove all old oak stumps from the orchard and to dig up all roots of such trees remaining in the soil. These should be carefully burned and in no case allowed to remain on the surface of the soil.

"From the nature of the disease the application of any fungicide as a remedial agent can not be recommended at all. And there is much doubt if their application to the soil will effectually prevent the spread of the mycelium through the soil from diseased trees or stumps. This is made probable from the fact that these fungicides are apt to lose their effectiveness in the soil through chemical combinations with other things present in the soil.

"It is very doubtful if any great good will result from 'liming' of the soil or from mixing a large amount of wood ashes with the soil. Neither of these methods would be of the slightest value as remedial methods, and further tests must be made before any value is ascribed to them as preventives of the further spreading of the mycelium.

"And though thorough cultivation of the soil is always to be recommended for other reasons, yet this may not tend to greatly reduce the spread of this disease. The thorough cultivation of cleared timber land in other crops before planting an orchard is, of course, to be commended. Perhaps in this fashion the fungus may simply be cultivated out of existence.

"In view of all that has been said, it is plain that it is not advisable to replant trees in holes from which diseased ones have just been removed unless perfect precautionary measures have been taken to rid the soil of all traces of the mycelium. And it is even doubtful if new trees should ever be planted out between the rows of diseased ones.

"And, finally, all sporophores that are found should be burned. The search for disease-resisting varieties will probably prove a failure and is a method that has in similar cases not yet proven itself entirely practical. The fact that this fungus and other similar ones are found as parasites on such widely different species as noted above would of itself discourage the attempt to secure a disease-resisting variety."—Exchange.

BLACK KNOT OF THE PLUM AND CHERRY.

The opinion is quite prevalent among farmers and many fruit growers that the disease known as black knot, so often found upon plum and cherry trees, is caused by certain insects. It is true that we may often find upon cutting open these knots the larvae of certain insects, but it is a universally recognized fact among those who have given the matter careful attention, that these unsightly, knotty excrescences are due to a special fungus which is almost always confined to the plum and sour cherry. The insects are there, because they find these knots to be good breeding places. The swellings are first noticed in early spring, often as soon as growth begins. They are then of a yellowish color, but get darker with age. In May and June a crop of spores, which answer to seeds in higher plants, appears on the surface of the knots, resembling to the naked eye a soft downy covering. This soon disappears, when the knots continue to get darker until winter, when they have the characteristic black color, which makes them so conspicuous at this season of the year. If examined carefully late in the fall, the surface of the knot will be found to be covered with a great many minute pimples or elevations, each one of which is a fruit of the fungus in which the winter spores are contained. These are in turn distributed later on, and find a lodging place in the crotches of limbs and in the openings of the bark, and at the junctions of the annual growths. As these spores germinate they send their vegetative organs into the growing tissues of the branch causing swellings, which often extend along the branches four or five inches. These vegetative tissues do not all die during the winter, but some live over and so new swellings, at the edges of the old ones, may be seen the following year. In this way the branch may continue to be infested until finally it becomes completely surrounded, when the circulation is cut off and the branch dies.

When these knots appear upon several branches at the same time, it is only a question of a very short time before the tree will die. The treatment generally recommended is to cut off the knots and burn them, which is a good thing to do, if it is done before the winter spores have been distributed. If not, then some additional treatment will be necessary. It is recommended, therefore, that all knots be cut off and burned during this month (February), and in addition to this, spray the trees with a strong solution of Bordeaux mixture during the first warm days of spring. About the time that buds start, spray again with the ordinary strength of Bordeaux mixture. This ought to destroy all the winter spores. Then in case the branches may have been already infected the previous year, they should be sprayed again during the latter part of May and the first of June. The young knots may be destroyed by painting them with chloronaphtholeum or with pure kerosene oil. Whenever these remedies are thoroughly applied, there will be no trouble in controlling the disease providing all old, worthless trees have been cut out and burned and providing, also, that the people of the entire neighborhood co-operate in this plan of action. Wherever the Damson plum is grown this disease is almost sure to be present; and as it is one of the "injurious plant diseases" referred to in the Indiana inspection law, the necessity for prompt action on the part of all owners of infested trees will be evident to all.—J. Troop, Purdue Experiment Station.

BROWN ROT OF PLUMS.

The plum trees owned by D. R. O. are affected with what is commonly called brown rot. This attacks many of the stone fruits. The cherry is seriously affected at times. In 1892 I observed one-third of the crop of Early Richmond affected near Dubuque. Earlier the same season the disease affected the flowering shoots of our Americana plums and the flowering almond as well. It is common on the peach, frequently destroying a good share of the crop, some varieties being much more seriously affected than others.

In the plums mentioned above, the season was a very favorable one. Cold, wet weather during the blossoming period soon caused the fungus to spread over the entire tree, with the result that no fruit set that year. It attacked the petals, pistils, stamens and leaves. Usually, however, the fungus attacks the fruit about the time the plums are ripening, especially during rainy weather. The spores of the fungus, which are contained in the chocolate brown masses, are carried by the rain, or when dry are blown by the wind. It is not infrequent that the loss to the crop is fully 50 per cent.

In the case of the young branches and flowers being attacked in spring, it is easy to observe that the old mummied plums convey the disease. These should be carefully removed from the tree in the fall and the trees sprayed with a solution of copper sulphate in the following proportions: Copper sulphate one pound, water twenty-five gallons. This treatment should be given before the buds open. This is an important treatment, as it destroys the spores of the mummied plums. It has also been shown that the disease can be prevented by spraying with Bordeaux mixture in the following proportions: Copper sulphate six pounds, strong fresh line four pounds, water twenty-two gallons. It will be necessary to make at least four applications, three with Bordeaux mixture and one with copper sulphate.—Prof. L. H. Pammel, Iowa.

MAKING CIDER AND VINEGAR.

The gale of September 12, that swept through New England after creating such terrible havoc and loss of life a few days before in Texas, has stripped a great deal of fruit from the trees in such immature, half-grown condition that it will not be fit for market or even for home use, as the fruit probably will not ripen properly or even keep long. It makes many of the farmers regret that the old cider mills which used to be found not far from every large orchard have been taken away or allowed to go to ruin, for many a cask of cider might be made from the fruit on the ground, even in small orchards.

We will not discuss the question of the use of cider as a beverage, whether it is as bad as stronger drinks, whether it helps to create an appetite for such, or whether it can become a more wholesome and reasonably safe substitute for them for those who crave some stimulant. The arguments upon these questions have been many times repeated without changing the minds of many either way. We propose to look upon cider merely as a preliminary process in the making of a pure fruit vinegar, which nearly every one wants as a condiment with certain articles of food.

We know that a considerable part of the vinegar sold and used in this country is not a fruit vinegar, but is manufactured from slops of various kinds, strengthened often with acids which are injurious to health or would be if the vinegar were used in more than small quantities and frequently. The hurtful effects of pickles may more often be ascribed to the acid in which they are put up than to the article that has been pickled. Such vinegars will undoubtedly be condemned and prohibited when the pure food law is enacted and enforced, and there will be a better demand for fruit vinegar, and for pure apple cider from which to make it.

To make good cider we need good, sound fruit, and if the cider was to be used as a beverage it would be better that the fruit should have ripened as much as is possible without having begun to decay. For vinegar this is not so important, although we doubt it very immature fruit makes vinegar as good as more mature fruit. It may contain as much acid, however, and we do not know that it is any less wholesome. We do know that early made cider usually will pass through the second or active fermentation more quickly, and become vinegar sooner than that which is made later.

Having good fruit, the next thing is to have it ground and pressed. At the larger mills where this is done, they have mills that will grind much more than the old mills with wooden rollers for crushing the fruit, which we often watched when a boy, and they have huge presses where hydraulic power or steam is used to squeeze out the juice from the pomace, which is put in and wrapped with cloth, so that it comes out in thin sheets instead of the large cheeses we knew then.

Whatever the process, however, it should be cleanly, as in preparing any other article of food. It used to be thought that in fermentation the cider worked off all impurities, and that any sort of filth might be allowed to go in before or during the grinding, but today we know that to get a pure article it must be pure from the start, and kept so, or the bacteria that are in it will multiply according to their kind, unchecked and undestroyed by fermentation.

A clean cask is needed to put it in. If an old cask is used that had cider or vinegar in it before, it should first be well soaked out, then rinsed out with water in which a handful of soda has been put, to sweeten it, then smoked inside by burning a rag that has been dipped in melted brimstone. Put this in the bung when the barrel stands on end, and when about half burned, reverse the barrel, that both ends may be well smoked. Put the bung in to retain the smoke or the sulphuric acid gas, which will form in the barrel, and do not remove the bung until ready to fill with cider, which will be all the cleaner and sweeter because of the sulphuring process. If new casks are used which have had liquor in them, they may be washed and rinsed as clean as the owner pleases, but the smoking is not needed, as most manufacturers burn the inside of their casks to a charcoal before they are filled, to prevent them absorbing too much of the liquor.

Strain the cider into the cask through straw, under which put one or more thicknesses of thick but not too closely woven bagging. The straw will catch the coarsest particles of pomace if any are pressed out, and the cloth the rest. When the barrel is taken home, remove the bung and allow it to work as much as it will. occasionally filling the barrel in the morning, as it works most during the day when it is warm, and may have settled in the night so that it would not overflow unless refilled. For this purpose a gallon or so should be kept beside that in the barrel. When fermentation is over, cover the bunghole with a bit of wire mosquito netting to keep out flies and other insects, and to admit air if vinegar is wanted. If it is to be used as cider, stop it tightly and keep it so excepting a spile to admit air when drawing.

We have seen many receipts for keeping cider from changing to vinegar, which varied from adding liquor to the use of salicylic acid, but we never found any that improved the flavor of good cider from sound fruit treated as we have described. To hasten the change into vinegar the keeping the cellar or storeroom warm and dry is important, and we have known it to be done by adding a gallon of molasses and warm water in which was put a little yeast, say about two quarts of cheap molasses and one cake of compressed yeast dissolved in two quarts of water. The cheap molasses is specified because it usually sours quicker than a heavy molasses.

Some put in the "mother" that gathers in a barrel of old vinegar; others take a barrel partly filled with strong vinegar and add one or two gallons of the cider, and after a few days draw out as much from the vinegar barrel and again add cider. Another way is to air the cider by allowing small streams to run out into a tub, from which it is dipped back into the barrel, while some take the trouble to run it through barrels of hard-wood shavings, through which it works so slowly as to become thoroughly aerated and it sours rapidly. Even frequent shaking of a partly filled cask will hasten the souring.

In certain sections they boil down the cider as soon as it comes from the mill, and before the first fermentation begins, and make the apple jelly often seen in grocery stores, but the operation is a rather difficult one, to get it cooked just enough without scorching. Those who have the evaporators used in making maple sugar, and who are used to boiling the maple sap, succeed better in this than any one would be likely to with less perfect apparatus and less experience. It needs skimming often during the process, we believe, but we have not tried it nor watched the process.

GRADING AND PACKING APPLES.

REQUIREMENTS OF THE APPLE SHIPPERS' ASSOCIATION OF THE UNITED STATES.

Standard Barrels.—Resolved, That this association recognizes as the standard barrel for apples a barrel which is of the capacity of a flour barrel, which is 17⅛ inches in diameter of head, and 28½ inches in length of stave, and bulge not less than 64 inches, outside measurement.

Requirements for No. 1 Apples.—Resolved, That the standard for size for No. 1 apples shall not be less than two and one-half inches in diameter and shall include such varieties as the Ben Davis, Willow Twig, Baldwin, Greening and other varieties kindred in size. That the standard for such varieties as Romanite, Russet, Winesap, Jonathan, Missouri Pippin and other varieties kindred in size shall not be less than two and one-quarter inches. And further that No. 1 apples shall be at time of packing practically free from the action of worms, defacement of surface or breaking of skin; shall be hand-picked from the tree, a bright and normal color and shapely form.

By-Law Establishing What a No. 2 Apple Shall Be.—The following, determining what a No. 2 apple shall be, was made a by-law of this association August 3, 1900, and appears among the by-laws.

No. 2 apples shall be hand-picked from the tree; shall not be smaller than two and one-quarter inches in diameter. The skin must not be broken or the apple bruised. This grade must be faced and packed with as much care as No. 1 fruit.

Packing Apples.—Remove one head and nail all hoops secure. Place carefully a row of choice apples; stem end down, average size, color and quality to be a fair sample of the contents of the balance of the barrel. Place the barrel on a solid platform or heavy board and proceed to fill carefully, shaking the same as you put in the fruit. The barrel should be shaken solid after each bushel of apples is put in. It will not do to set the barrel on the ground, as the idea of shaking is to make the contents as solid as possible. The barrel should be filled an inch above the chime after being shaken solid.

The bottom then should be pressed in with an apple press and fastened securely either by nailing or head lining, turned over and the name of the apple marked plainly on the faced end, as what was originally the bottom of the barrel is now the top and becomes the end opened and displayed when on sale.—Year Book, Apple Shippers' Association of the United States.

THE SMALL APPLE PACKAGE.

Selling Problems.—What shall we do with our apples? This question was not asked by eastern fruit growers during the past season, but it is not necessary to look back far to see farmers hauling fine Spies or Baldwins four miles to market for 50 cents a barrel, which comes quite near to paying for the privilege of working. Such seasons of surplus are rare, yet the problem of how best to dispose of a large crop is often a difficult one. We may raise too many perishables, like peaches, pears, plums, grapes or small fruits, but the danger limit is far away for the production of that many-purpose, all-the-year fruit, the apple. In New York City, for instance, in flats and apartment houses, are hundreds of families who use but few apples. They scarcely know that there are such fruits as fine-grained Northern Spies, good and reliable, but slightly coarser Baldwins, and Bellflowers and Spitzenburgs, which, when baked or stewed, need no lemon or orange-peel trimmings. Here is a possible additional market for thousands of bushels of apples, right within arm's length of eastern fruit growers.

Smaller Package Needed.—The barrel is an excellent package, strong and easily handled, but it is too large for the city retail trade. Most city houses have no suitable place for storing this quantity of fruit. Many flats are so thoroughly occupied that were a barrel to appear at the door and insist on coming in the cat and child would have to run for the fire escape. Grocers and peddlers sell apples in the residence districts. The peddler's stock is usually a lot of culls, handled over and bruised until nearly worn out. The grocer buys medium-grade barreled apples and sells them in lots of two to four quarts, mixing in plenty of culls. With practically nothing but such wretched specimens of the apple tribe within reach, it is not strange that these people use few apples. What is required is a package small enough for the average city family to use before becoming stale. There is no better place to do this packing than where the fruit is grown or at the point of shipment. The less apples are handled the better they are. If packed on a farm where picked, and properly stored, there would be no need of any extra handling, and the consumer might actually get fruit with the bloom on, just as it came from the tree. Where this plan has been tried in a small way good results are reported. There is no doubt that when fruit growers get ready to put up their best apples uniformly and properly they will have no trouble in making connection with dealers in the city who will carefully carry out their end of the plan. Here is what Charles Forster, a New York apple man of wide experience in foreign and domestic trade, says:

"For the higher grades of apples the box is the coming package. I believe no one will make a mistake by packing his best apples in this way. Our Spitzenburgs are selling as high as $3 to $3.50 per box. The relative value in barrels is about the same, but at these prices one would buy a box where he would not take a larger quantity, two-thirds of which might spoil before they could be used."

A Typical Box.—The inside dimensions are 20½x11x9¾ inches. This makes a cubic content of a trifle over an even bushel, and about six quarts less than a heaping bushel. The ends are three-fourths-inch material, and all four sides are one-fourth-inch hard pine. There is no partition, as in the orange box. The apples may be put in tightly, and the thin springy sides hold them without bruising. The box is put together with thirty-two rough wire nails 1¾-inch long. The chief advantages of this package are: Convenient size; strength, given by the solid ends and secure nailing; and springy sides, permitting the apples to be crowded in slightly and holding them firmly without bruising. Eastern fruit-growers' associations are becoming numerous and strong. This undeveloped city trade may be theirs if they will establish uniform, convenient packages, put on labels that shall become guarantees of quality, and work systematically to get the goods introduced. This trade will never be worked up by those who take a back seat and merely think about it. Get the fruit to the consumer's door, let him see what it is, and he will be glad to invite the boxed apple in and hand over his cash for it, for even at these extreme prices fancy boxed apples are no higher proportionately than many other food stuffs which he buys.—W. W. H.

A standard apple box has been adopted by the Inland Empire Horticultural Association of Washington. The box is to contain 2,241 cubic inches of space and will be made in two shapes in order to conform to the different varieties of apples. One size will be 10x11x20¼ inches inside measure and the other will be 10½x11x18 9-16 inches inside measurement. The official standard adopted by the association is slightly over a bushel. Each box of apples is to be branded "One bushel." The next Legislature will be urged to adopt such a standard by law, coupling therewith a penalty for using any other.—Rural New Yorker.

TWELFTH ANNUAL REPORT

OF THE

Indiana State Dairy Association.

ANNUAL MEETING

HELD AT

Plainfield, Hendricks County, December 18–19, 1901.

(Stenographic Notes by J. W. Walker.)
Edited by H. E. VAN NORMAN, Secretary

OFFICERS OF THE INDIANA STATE DAIRY ASSOCIATION.

PRESIDENTS.

C. S. Plumb, Lafayette, Tippecanoe County	1891-1893
Bartlett Woods, Crown Point, Lake County	1893-1894
W. S. Commons, Centreville, Wayne County	1894-1895
C. S. Plumb, Lafayette, Tippecanoe County	1895-1896
O. A. Stubbs, Lewisville, Henry County	1896-1897
S. B. Woods, Lottaville, Lake County	1897-1898
J. J. W. Billingsley, Indianapolis, Marion County	1898-1899
C. B. Benjamin, LeRoy, Lake County	1899-1900
C. S. Plumb, Lafayette, Tippecanoe County	1900–

VICE-PRESIDENTS.

Chas. C. VanNuys, Franklin, Johnson County	1893-1894
J. M. Knox, Lebanon, Boone County	1894-1895
W. S. Commons, Centreville, Wayne County	1895-1896
Chas. B. Benjamin, LeRoy, Lake County	1896-1897
O. P. Macy, Mooresville, Morgan County	1897-1898
G. W. Drischel, Cambridge City, Wayne County	1898-1899
J. V. Shugart, Marion, Grant County	1899-1900
J. M. Knox, Lebanon, Boone County	1900 –

FIRST VICE-PRESIDENT.*

D. H. Jenkins, Indianapolis, Marion County	1891-1892

SECOND VICE-PRESIDENT.*

Mrs. Kate M. Busick, Wabash, Wabash County	1891-1892

THIRD VICE-PRESIDENT.*

C. B. Harris, Goshen, Elkhart County	1891-1892

SECRETARY-TREASURER.

Mrs. Laura D. Worley, Ellettsville, Monroe County	1891-1893
W. S. Commons, Centreville, Wayne County	1893-1894
H. C. Beckman, Brunswick, Lake County	1894-1897
C. S. Plumb, Lafayette, Tippecanoe County	1897-1898
H. E. Van Norman, Lafayette, Tippecanoe County	1898—

OFFICERS AND MEMBERS OF THE INDIANA STATE DAIRY ASSOCIATION FOR 1902.

C. S. Plumb, President, Lafayette, Tippecanoe County.
J. M. Knox, Vice-President, Lebanon, Boone County.
H. E. Van Norman, Secretary-Treasurer, Lafayette, Tippecanoe County.

EXECUTIVE COMMITTEE.

C. S. Plumb; J. M. Knox; H. E. Van Norman; Samuel Schlosser, Plymouth; A. J. Newsom, Valley Mills.

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*In 1893 the offices of first, second and third Vice-Presidents were abolished.

MEMBERSHIP LIST.

ANNUAL MEMBERSHIP.

The following persons have paid one dollar into the treasury for membership in the Association for 1901 since the publication of the last report:

Name.	*City or Town.*	*County.*
Henley, E. E.	Straughn	Henry.
Lamont, Charles	Joppa	Hendricks.
Osborn, W. N.	Wanatah	Laporte.
Salsbury, F. G.	Orland	Steuben.
Stutesman, H.	Goshen	Elkhart.
Stubbs, O. A.	Lewisville	Henry.
Wilson, T. C.	West Lafayette	Tippecanoe.

The following persons have paid one dollar into the treasury for 1902 membership:

Name.	*City or Town.*	*County.*
Anderson, D. W	Plainfield	Hendricks.
Anthony, R	Columbus, Ohio.	
Barker, Mrs. H. N	Carmel	Hamilton.
Barker, H. N.	Carmel	Hamilton.
Barnett, Edw.	Plainfield	Hendricks.
Bean, John	Richmond	Wayne.
Benjamin, C. B.	LeRoy	Lake.
Billingsley, J. J. W.	Indianapolis.	Marion.
Blair, Arthur	Bridgeport	Marion.
Boyd & Drischel	Cambridge City	Henry.
Bradford, I. H	Bridgeport	Marion.
Brandon, M. C	Evansville	Vanderburgh.
Breuscher, J	Dyer	Lake.
Burnside, T. C	Liberty	Union.
Christ, John	Washington, Illinois.	
Colton, John F.	Evansville R. R. 1	Vanderburgh.
Dungan, S. O	Indianapolis	Marion.
Farmer, A. W	Mooresville	Morgan.
Franklin, Finley	Clayton	Hendricks.
Furnas, R. W	Indianapolis	Marion.
Gerlach, A. J	Crown Point	Lake.
Greene, S. F	Auburn Park, Ill., 7617 Union Ave.	
Gore, W. E	Lafayette	Tippecanoe.

Name.	*City or Town.*	*County.*
Hach, J. M	Crown Point	Lake.
Hadley, C. R	Friendswood	Hendricks.
Harvey, Calvin	Bridgeport	Marion.
Hedges, B. F	Plainfield	Hendricks
Heller & Merz	New York City, N. Y.	
Henly, E. E	Straughn	Henry.
Hill, J. B	Saginaw, Michigan.	
Holderman, C. E	Bremen	Marshall.
Hollingsworth, A. A	Plainfield	Hendricks.
Holloway, Silas	North Manchester	Wabash.
Hornaday, Grant	Plainfield	Hendricks.
Husselman, K. B	Auburn	Dekalb.
Jenkins, D. H	Indianapolis	Marion.
Jenkins, Harry	Indianapolis	Marion.
Jessup, Geo	Plainfield	Hendricks.
Jessup, Harrison	Friendswood	Hendricks.
Johnson, Perry L	Prairie Creek	Vigo.
Kellum, Jesse	Indianapolis	Marion.
Knox, J. M	Lebanon	Boone.
Kortz, J. H	Lafayette	Tippecanoe.
Kratz, C. W	Evansville R. R. 3	Vanderburgh
LaFuze, Ezra	Liberty	Union
Lamont, Mrs. Chas	Joppa	Hendricks.
Lisman, C. W	Carlisle	Sullivan.
Macy, O. P	Mooresville	Morgan.
Macy, W. C	Plainfield	Hendricks.
Martin, Earl	New Carlisle	St. Joseph.
McBeth, Robert	Fairland	Shelby.
Mills, D. D	Plainfield	Hendricks.
Mills, Elwood	Bridgeport	Marion.
Mills, O. H	Mooresville	Morgan.
Morse, W. H	Hartford City	Blackford.
Newsome Bros	Valley Mills	Marion
Newby, Herbert	Spiceland	Henry.
Parsons, A. A	Plainfield	Hendricks.
Parsons, Edith	Plainfield	Hendricks.
Parsons, Mrs. N. E.	Plainfield	Hendricks.
Penrod, J. F	Plymouth	Marshall.
Reeves, Horace	Friendswood	Hendricks,

Name.	*City or Town.*	*County.*
Schwegler, W. G	Lafayette	Tippecanoe.
Shaw, Mrs. E. J	Plainfield	Hendricks.
Shugart, J V	Marion	Grant.
St. John, A. F. W	New York, N. Y.	
Sudendorf, E	Elgin, Illinois	
Usher, Geo	Cambridge City	Henry.
Van Norman, H. E	Lafayette	Tippecanoe.
Wallenmeyer, J. C	Evansville	Vanderburgh.
Welborn, J. M. T., Jr	Bridgeport	Marion.
Werking, Oliver	Hagerstown	Wayne.
Woods, S. B	Lottaville	Lake.
Wildman, C	Deedsville	Miami.
Willson, Wm. D	Osgood	Ripley.
Yoars, Geo. M	Amboy	Miami.
York, E. E	Plainfield	Hendricks.

LIFE MEMBERS.

Boyd, Jas. A	Cambridge City	Henry.
Commons, W. S	Centreville	Wayne.
Drischel, G. W	Cambridge City	Henry.
Ellison, T. E	Ft. Wayne	Allen.
Plumb, C. S	Lafayette	Tippecanoe.
Schlosser, Samuel	Hanna	Laporte.

SUMMARY.

Active members	84
Life members	6
Total	90

COUNTIES REPRESENTED.

Allen.
Blackford.
Boone.
Dekalb.
Elkhart.
Grant.
Hamilton.
Hendricks.
Henry.
Lake.
Laporte.
Marion.
Marshall.
Miami.
Morgan.
Ripley.
Shelby.
St. Joseph.
Steuben.
Sullivan.
Tippecanoe
Union.
Vanderburgh.
Vigo.
Wabash.
Wayne.

ARTICLES OF ASSOCIATION OF THE INDIANA STATE DAIRY ASSOCIATION.

(As amended December 7, 1899.)

Article 1. The name of this Association shall be "The Indiana State Dairy Association."

Art. 2. The officers of this Association shall consist of a President, Vice-President and Secretary-Treasurer, and an Executive Committee, consisting of the President, Vice-President, Secretary-Treasurer and two others elected by the Association. The Secretary is authorized, whenever necessary, to employ an assistant secretary of his own appointment, to assist at the annual meeting, who shall be paid for his services as the Executive Committee may decide. A committee of two, to audit the Secretary-Treasurer's accounts, shall be appointed by the President at each annual meeting.

Art. 3. The officers shall be elected to serve one year, or until their successors have been elected.

Art. 4. The regular annual meetings shall occur at such time and place as may be designated by the Executive Committee, or by majority vote of the Association at the annual meeting.

Art. 5. Any person can become a member of this Association for one year by the payment of a fee of one dollar. Upon the payment of ten dollars, a person may become a life member. Honorary members not to exceed five may be elected, but said election is not to hold for over two years, excepting by re-election.

Art. 6. The President shall have power to call a special meeting at such time as in his judgment the interests of the Association demand.

Art. 7. The Executive Committee shall have power to transact all unfinished business.

Art. 8. The Treasurer shall be the custodian of all the funds belonging to the association, and pay out the same on the order of the President. The Treasurer shall also furnish sufficient bond, as determined by the Executive Committee, to guarantee all moneys owned by the Association, handled by him, the said bond to be deposited in such national bank as may be designated by the Executive Committee.

Art. 9. The officers of this Association shall perform such duties as usually devolve upon officers of similar organizations.

Art. 10. The President and Secretary shall each be allowed out of the general fund an amount equivalent to their actual expenses while attending Association meetings. When the Association receives State aid the Treasurer is authorized to meet the expenses of the Executive Committee in all cases of called meetings where executive business is transacted.

Art. 11. These articles may be amended by a majority vote of the members of the Association present.

PROCEEDINGS OF THE TWELFTH ANNUAL CONVENTION OF THE INDIANA STATE DAIRY ASSOCIATION, PLAINFIELD, INDIANA.

WEDNESDAY MORNING SESSION.

December 18, 1901.

The Indiana State Dairy Association was called to order by the President, C. S. Plumb.

Music by the Reform School Band.

Invocation by Rev. L. E. Stout, Plainfield, Ind.

President: The Hon. Edward Barrett, of Plainfield, will extend greeting to the State Dairy Association in annual meeting assembled at Plainfield.

Hon. Edward Barrett: Members of the Indiana State Dairy Association, Ladies and Gentlemen—On behalf of the local dairymen and the citizens of Plainfield, we welcome you to our village with the best it has. You come to us a State organization, to a town like Plainfield, with the best and richest thought of three, at least, of the best scientific schools in the United States—our own Purdue University, the State University of Ohio, and the State University of Illinois. You bring to us, I say, the very latest and richest thought on these various subjects that these schools have at hand. You not only bring to us these, but you bring to us the best thought of many others who are on the program—local dairymen—who can speak to us from experience of their actual observation, actual contact with the work of dairymen. It is easily within the memory of the youngest dairyman here when the machinery of the dairy consisted of a tin bucket and a skimmer. You come to us at Machinery Hall with the latest thoughts and inventions in reference to dairy machinery, which will be on exhibition there. You come to us with some of the finest products of the dairy farm, not only of the country dairy, but the tubs, which you exhibit in our hall, for all of which and all of these we are thankful; and I wish to say that we are thankful to have you here as men, and hope that you will be treated wherever you go with the milk of human kindness, and hope that you will skim off a goodly share of cream and good cheer and good will. (Applause.)

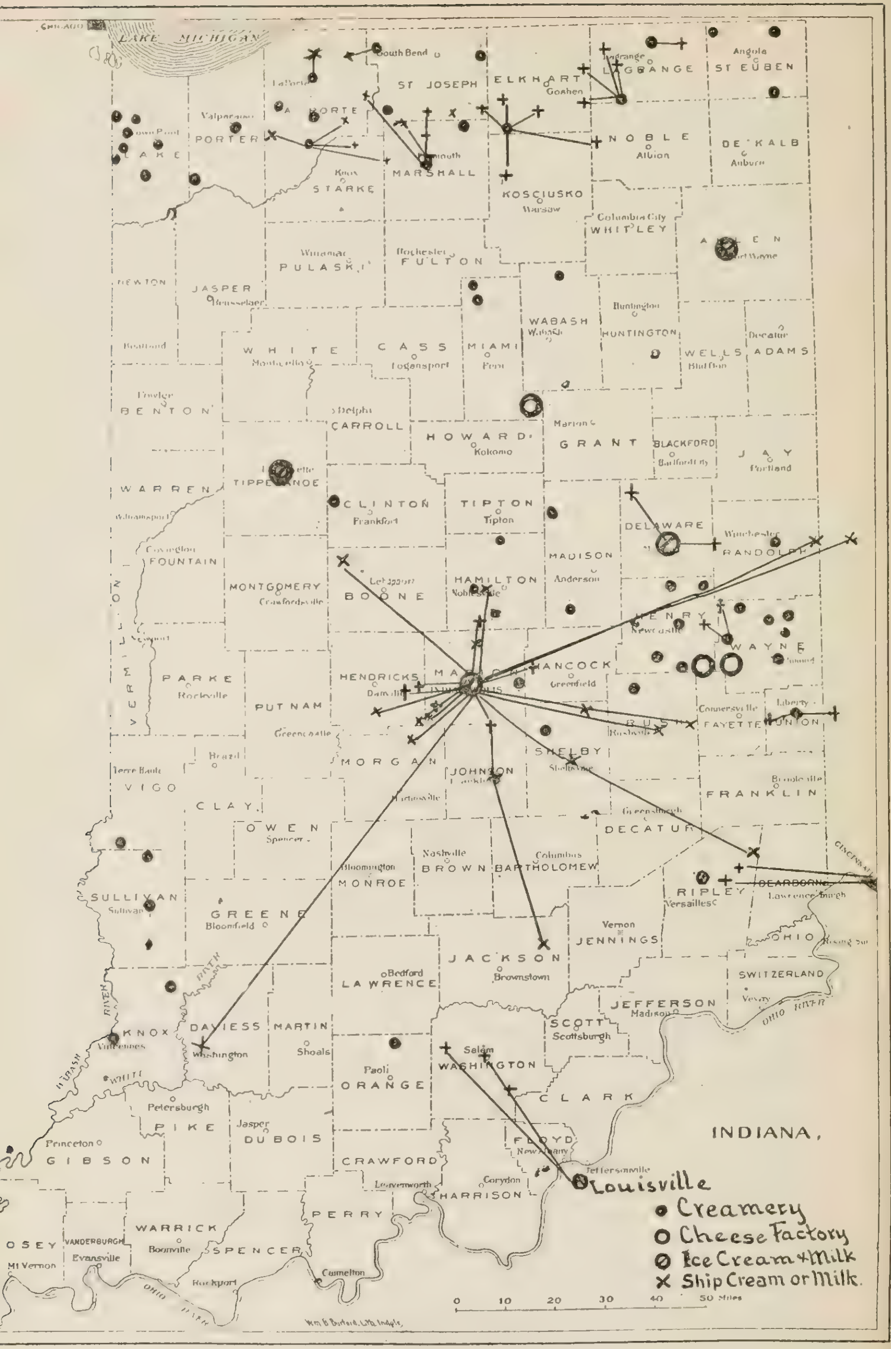
President: Mr. J. M. Knox, Vice-President of the Association, will respond in behalf of the Association.

Mr. Knox: Gentlemen of the Association, and Local People—It falls to my lot to respond to this eloquent address of welcome. I am poorly prepared to do justice to the address, but, in my way, I express our heartfelt thanks for the hearty welcome we have received. It is always, to my mind, depressing to have a small local attendance. There is but one lady present; we wish we had fifty to cheer us fellows who are away from home. Their presence and their smiles cheer and encourage us. Plainfield is on the map, and ought to be in big letters. We have two institutions here that the State of Indiana ought to be proud of. We have a Keeley Institute, that has made many a home happy, from the fact that it has reclaimed from the ditches good, honest-hearted men, who have made better men and better husbands by having attended this institute. The President spoke of the Reform School. Here is an institution that is wrongfully named. It may be a reform school, but I think the other institution is the reform school. This should have a better name —should be called by a better name than Reform School; it should be called a school of training, or a home for neglected boys. There are many boys who come to this home who are neglected at home; who have not had the proper treatment; who haven't that sympathy and mother's care that they deserve, and for that reason I thank God that we have this institution. These young men are growing up to fill the places of the older men who are bound to drop out. They have a mission to perform, and I am proud and happy to say a good word to them to help them along in their upward life, the better life; help them to live out the possibilities that are presented to them. I have a neighbor who got his best training in this school. He is now managing a 200-acre farm, and he is one of the progressive men of our community. He had a father and mother who were good to him, but he did not get that sympathy that he ought to have had. He went wrong, and they brought him here. He was stubborn for a time, but he thawed out, and today he is one of the brightest and most intelligent boys we have in our community. He has forged ahead, got a fine family, and proud of his position; and I went to talk to him day before yesterday about this school here, and he says: "Go and say I consider it an honor to be a member of it." And I want to say that we are truly thankful for such a welcome as we have received. I thank you.

President: We will next listen to the report of the Secretary and Treasurer (Report will be found at back of book.—Ed.)

Secretary: As Secretary of the Association, there are a few facts that I wish to bring before you. There are in the State, so far as I can learn, about eighty creameries, of which I know sixty have been running this past year, leaving twenty that we do not know about. Many of these, doubtless, are running. About eighteen or twenty creameries are in three counties—Wayne and surrounding. Of the rest, a large number of them are in Lake and the northern tier of counties. There are four or five right straight south of Terre Haute, and one right in the south central part of the State, making only five creameries in all south of a line across the State through Terre Haute, the rest being mostly in the northern counties, and one or two scattered between Indianapolis and the north line of the State.

We have, as far as I know, only two exclusive cheese factories—one at Amboy and one at Cambridge City. There are several smaller factories which are buying milk and making butter and cheese, or cheese, and shipping cream. One of the complaints they make is that the farmers want their skim milk back, and won't take whey, so they can't put all their milk into cheese. Several of our creameries have skimming stations, some of them having as many as five or six, others one or two. The average amount of milk varies from 14,000 pounds per day in one case; in several 7,000 per day to as low as 1,300 pounds a day. This is the average amount of milk received. The price paid for butter fat by some fifteen creameries—I have taken an average—for the year ending October 1, 1901, varies from 17½ cents to 19⅓ cents. There may be others higher or lower than this. Seventeen and one-half cents is not a particularly high price, but when you understand the conditions that existed at that time it is very good. It is difficult to control the quality of milk, and difficult to get milk that will make butter worth more. Milk producers do not seem to realize that it costs something to manufacture butter, and the more milk they get the cheaper that butter can be made. A trip through several sections of the State has impressed me with the thought that Indiana ought to produce a good deal more butter. Up around South Bend I found three creameries selling all their butter to local markets, and every one of them said they could sell a great deal more if they had it. There seems to be no trouble about finding a market. I have not heard anybody complaining about prices of butter; the burden of the complaint is to get milk enough. I hope that Indiana will increase her dairy interests very materially. The southern end of the State is particularly suited to it. They have land there they can't use to so good an advantage for anything else, and when they realize at what profit dairying can be carried on, it seems to me more farmers will make it a part of their work.


CHICAGO
LAKE MICHIGAN
South Bend
La Porte
PORTE
ST JOSEPH
ELKHART
Goshen
Lagrange
LAGRANGE
Angola
STEUBEN
Valparaiso
PORTER
Crown Point
LAKE
Plymouth
MARSHALL
Knox
STARKE
KOSCIUSKO
Warsaw
NOBLE
Albion
DE KALB
Auburn
Columbia City
WHITLEY
ALLEN
Fort Wayne
Winamac
PULASKI
Rochester
FULTON
NEWTON
JASPER
Rensselaer
WHITE
Monticello
CASS
Logansport
MIAMI
Peru
WABASH
Wabash
Huntington
HUNTINGTON
WELLS
Bluffton
Decatur
ADAMS
Kentland
Fowler
BENTON
Delphi
CARROLL
HOWARD
Kokomo
Marion
GRANT
BLACKFORD
Hartford City
JAY
Portland
Lafayette
TIPPECANOE
WARREN
Williamsport
CLINTON
Frankfort
TIPTON
Tipton
DELAWARE
Muncie
Winchester
RANDOLPH
Covington
FOUNTAIN
MADISON
Anderson
MONTGOMERY
Crawfordsville
Lebanon
BOONE
HAMILTON
Noblesville
HENRY
New Castle
WAYNE
Richmond
VERMILLION
Newport
PARKE
Rockville
HENDRICKS
Danville
MARION
INDIANAPOLIS
HANCOCK
Greenfield
PUTNAM
Greencastle
RUSH
Rushville
Connersville
FAYETTE
Liberty
UNION
Brazil
MORGAN
SHELBY
Shelbyville
Terre Haute
VIGO
CLAY
JOHNSON
Franklin
Martinsville
Brookville
FRANKLIN
OWEN
Spencer
Greensburgh
DECATUR
Bloomington
MONROE
Nashville
BROWN
Columbus
BARTHOLOMEW
CINCINNATI
RIPLEY
Versailles
DEARBORN
Lawrenceburgh
SULLIVAN
Sullivan
GREENE
Bloomfield
Vernon
JENNINGS
OHIO
Rising Sun
JACKSON
Brownstown
Bedford
LAWRENCE
SWITZERLAND
Vevay
WABASH RIVER
WHITE RIVER
JEFFERSON
Madison
SCOTT
Scottsburgh
OHIO RIVER
KNOX
Vincennes
DAVIESS
Washington
MARTIN
Shoals
Salem
WASHINGTON
Paoli
ORANGE
CLARK
Petersburgh
PIKE
Jasper
DUBOIS
Princeton
GIBSON
CRAWFORD
FLOYD
New Albany
Jeffersonville
Louisville
Leavenworth
Corydon
HARRISON
PERRY
POSEY
Mt Vernon
VANDERBURGH
Evansville
WARRICK
Boonville
SPENCER
Rockport
Cannelton
OHIO RIVER
INDIANA,
● Creamery
○ Cheese Factory
⊘ Ice Cream + Milk
× Ship Cream or Milk.
0 10 20 30 40 50 Miles
Wm B Burford, Lith. Ind'pls.

INDIANA CREAMERIES.

The following list is based on information at hand June 1, 1902. It is not as complete as could be wished for, as many to whom requests for information were sent did not respond, and many who did were unable to give all that was asked for. It is hoped and asked that any one knowing of omissions or errors will notify the secretary, in order that the next report may be corrected, be more complete and useful as an index to Indiana's dairy industry. The figures concerning any particular creamery are not published or even quoted, and it is hoped that future efforts will bring more complete information.

Postoffice.	*County.*	*Owner.*	*Manager.*	*Butter or Cheese Maker.*
Amboy[1]	Miami	S	G. M. Yoars	Frank Arnold.
Arcadia	Hamilton	P	Henry Waltz	Henry Waltz.
Bloomingport	Randolph	P	Mrs. D. W. Knight	A. Knight.
Bremen	Marshall	P	Henry Schlosser	C. E. Holderman.
Brunswick	Lake	C	Julius Echterling	Harry Mathews.
Blountsville	Henry	P	Oran Hodson	Jas. Redding.
Cambridge City[1]	Wayne	P	Geo. W. Drischel	Geo. Usher.
Carlisle	Sullivan	C	Jas. H. Padgett	C. W. Lisman.
Carthage	Rush	P	H. E. Stager	Chas. Jenkins.
Centerville	Wayne	S	W. S Commons	John W. Rohe.
Creamburg	Lake	C	Wm. Schleicher	F. Hilkene.
Crown Point*	Lake			
Cumberland*	Marion	C	Jos. Berg	
Creston*	Lake			
Dyer	Lake	C	F. Kalvelage	J. Breuscher.
Deedsville*	Miami	C	E. V. Robbins	
Economy	Wayne	P	Wm. R. Williams	Levi Stam.
Elwood*	Madison	P		
Fairland*	Shelby		R. McBeth	
Farmersburg	Sullivan	C	W. S. Baldridge	O. M. Grizzle.
Fountain City	Wayne	S	W. S. Commons	Peter Cutler.
Freelandsville	Knox	?	F. H. Krueger	Aug. Loehr.
Fremont	Steuben	C	J. E. Fralick	G. Stroh.
Hagerstown	Wayne	S	T A. Shaffer	O. R. Werking.
Hanna	Laporte	P	Schlosser	A. Terry.
Hebron	Porter	C	B. F. Nichols	B. F. Nichols.
Hamilton	Steuben	C	H. Sweet	B. C. Raymond.
Lewisville	Henry	?	J. A. Bartlett	O. J. Richardson.
Lima	Lagrange	C	J. C. DeVinney	C. E. Perkins.
Laporte	Laporte	S	J. Vene Dorland	Fred C. Zeck.
Liberty	Union	S	T. C. Burnside	J. W. Burgogne.
Macy	Miami	C	J. W. Carver	J. W. Carver.
Mulberry	Clinton	P	M. J. Osterday	M. J. Osterday.
Nappanee*	Elkhart	P		
New Carlisle	St. Joseph	S	A. H. Compton	Earl Martin.
New Castle	Henry	P		
North Manchester	Wabash	P	Silas Holloway	A. V. Holloway.
North Liberty*	St. Joseph	P		
Orland	Steuben	C	F. G. Salisbury	John Staublie.
Orleans	Orange	P	J. L. Burton	H. J. Fidler.

Postoffice.	*County.*	*Owner.*	*Manager.*	*Butter or Cheese Maker.*
Osceola	St. Joseph	S	C. W Curtis	John Enjer.
Plymouth	Marshall	P	Samuel Schlosser	J. F. Penrod.
Pendleton	Madison	P	C. M. Bratain	L.C.Chamberlain
Prairie Creek*	Vigo	?		Perry L. Johnson.
Schererville*	Lake			
Spiceland	Henry	S	J. W. Newby	Herbert Newby.
Straughn[2]	Henry	P	E. E. Henly	H. W. McGeath.
Springport	Henry	C	J. W. Patterson	W. A. Wollen.
Sullivan	Sullivan	C	W. S. Hastings	W. S. Hastings.
St. John*	Lake	?		
Topeka	Lagrange	P	H. M. Zook	C. E. Yoder.
Union Mills	Laporte	C	D. H. Wakeman	D. H. Wakeman.
Valparaiso	Porter	S	S. Bearss	Chas. Morrow.
Vincennes	Knox	C	D. E. Riley	D. E. Riley.
Westfield	Hamilton	P	Austin Roberts.	W. B. Hill.
Westville	Laporte	P	H. Kresel	H. Kresel.
Winchester	Randolph	C	Lyn Puckett	W. A. Cropper.
Winona	Starke	P	Ed. Merkert	Ed. Merkert.
Webster	Wayne	S	W. S. Commons	L. B. Harris.
Williamsburg	Wayne	P	W. S. Commons	

ICE CREAM MANUFACTURERS AND MILK DEALERS.

The following firms buy large quantities of milk for retailing and manufacture of ice cream, usually making the surplus into butter. The list, like the above, is not complete:

Town.	*County.*	*Firm Name.*	*President or Manager.*
Columbia City*	Whitley	Columbia City Creamery	
Delphi	Carroll	Delphi Ice Cream Co	D. N. Bane.
Ft. Wayne	Allen	Mondamin Meadows Creamery	T. E. Ellison.
Indianapolis*	Marion	W. H. Ballard	
Indianapolis*	Marion	Elgin Dairy Co	
Indianapolis*	Marion	R. L. Furnas	
Indianapolis*	Marion	Indianapolis Creamery Co	
Indianapolis*	Marion	Jessup & Antrim	
Indianapolis*	Marion	J. T. Polk	
Indianapolis	Marion	Putnam Creamery Co	A. L. Lockridge.
Lafayette	Tippecanoe	D. J. Chamberlain & Son	John Chamberlain.
Muncie	Delaware	Brooks Creamery Co	Geo. W. Brooks.
Osgood	Ripley	W. D. Willson	W. D. Willson.

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*Believed to be running, but have not responded to request for information.

S Stock company. P Private owner. C Co-operative. ? Don't know.

[1] Cheese. [2] Cheese and butter.

CREAMERY STATISTICS, 1901.

	Number Answering Question.	Number.
Creameries and factories known to be running June 1, 1902	59	
Ice cream makers and milk dealers	12	
Skim stations in operation by nine creameries		34
Creameries receiving over 5,000,000 lbs. milk in 1901	3	3
Average pounds milk received in 1901	23	2,176,361
Smallest pounds milk received in 1901		380.000
Largest pounds milk received in 1901		6 950,000
Average price paid per pound of fat	23	19.36 cts.
Lowest yearly average per pound of fat		17 00 cts.
Highest yearly average per pound of fat		21.75 cts.
Largest number patrons, July 1, 1901		690
Average number patrons, July 1, 1901	38	122
Smallest number patrons, July 1, 1901		30
Largest number patrons, January 1, 1902		500
Average number patrons, January 1, 1902		105
Smallest number patrons, January 1, 1902		20
Average cost of creamery plants	23	3,820
Owned by one or two individuals	53	23
Owned by stock company		12
Owned by co-operative company		18

COMMENTS.

The use of hand separators on the farm and delivery of cream only to the creamery has begun, but is not largely used yet.

Many creameries were built by "promoters," who charged exorbitant prices, hence the high average cost. A good creamery can be built and equipped for $2,000 to $3,000. With few exceptions the creameries receiving the largest daily run of milk paid the highest price for fat. Patrons should realize that a large run of milk reduces cost per pound for making the butter. The names of several milk and cream shipping stations were received too late to be put in map.

President: I wish to say a few words to those present, bearing upon the Dairy Association, not on the program here. Our Association, two years ago, at the session of the Legislature before the last one, made an endeavor to secure the appropriation, such as we had from the preceding session, of $500 a year for two years; but the Ways and Means Committee of the House of that year did not favor appropriations of any sort for associations of this character. While they approved of this Association, they did not approve of the principle involved, and consequently the State Dairy Association for last year and the year before received no State aid; and the result of it was, as we had learned to do years ago, we had to scrape money together from memberships and other sources to meet the necessary expenses of the Association. But, from the beginning, we have never failed to get up a complete stenographic report of our annual meeting, and we did it the past two years. Mr. Reser, who has very ably officiated as stenographer for this Association at numerous of its meetings, was, fortunately for us, elected to the Legislature from Tippecanoe County, and occupied a position on the Ways and Means Committee of the House, and we have to thank him for vigorously championing our cause. He carried his point, and, through his efforts, we are better off this year and next year by our State aid. Now, I will confess, in talking frankly, I have been disappointed with the way the dairymen of Indiana have supported this organization. We have had numerous meetings that I considered most excellent. In some of the places we have held our meetings we have had crowded halls; we have had people come from other States, and we have had some of the best dairy authorities in the United States lecture before us, and our meetings were entirely a success. But the people of the State who are interested in the great dairy interests have not taken hold and put their shoulder to the wheel to make this Dairy Association what they should make it, and in that way I have been disappointed. There are many of you here who know something of the hard times that the dairymen of Indiana have been going through, and particularly the creamery interests; and there are creamerymen in the State who have felt that the creamery interests have not received satisfactory consideration by the Dairy Association, and yet I feel that we have endeavored to do everything we could for the general good of the dairy interests of the State. This year we have made special provision for the creamery interests, and this morning we have three papers on our program representing the creamery interests. I am very sorry to say that not one of the three persons that represents these interests is here this morning, and I think it is the first time in the history of this Association for years when so large a number have been absent from any part of the program for a day. Undoubtedly there are good reasons for the absence of these persons on the program, but I simply call your attention to this to show that the Dairy Association wished to make itself, in every sense of the word, as useful as possible to the people of Indiana.

I feel very sure that before our two days' session is over we will have a large attendance of dairymen, and we wish to make this meeting as profitable as possible for all concerned; so let each one take an active part in the proceedings, and help to make it of such a free and easy character that, by the time we adjourn tomorrow afternoon, all of those who have gone to trouble and expense to attend will feel that this has been a very profitable meeting. I am sure that we will have the necessary dairy talent to make it a successful and instructive one. We will have a selection now by the band, and then we will go on with the program.

Music by Reform School Band.

President: Among the creamery butter-makers of the State of Indiana, one man of whom we have special reason to feel proud is Perry L. Johnson. He is one of the few who have gone from our State into other States and exhibited specimens of his handiwork. He has shown his butter at the Pan-American Exposition; at the National Butter-Makers' Conventions and at other places, and has done something to make the rest of the world know that Indiana could make good butter. He has been a very successful person in winning premiums, and so we have asked him to tell us how he made his butter. Unfortunately, owing to the sickness of one of the men in his creamery, he is reported as unable to come, but the Secretary will read his paper on "How I Made My Premium Creamery Butter."

Secretary: I was in Mr. Johnson's factory, and he is a hustler. He was working under difficulties there, and I was surprised to see the results he was getting under those conditions.

HOW I MADE MY PREMIUM CREAMERY BUTTER.

PERRY L. JOHNSON, PRAIRIE CREEK.

Mr. President, Ladies and Gentlemen—Some time ago our Secretary asked me to present a paper before this Association, having for its theme, "How I Made My Premium Butter." The theme itself seems at first presumptuous, because of the pronoun I. It may also seem presumptuous in that the theme may be understood to mean that there is some great secret in butter-making, and that I am the sole possessor of it, and have already taken out letters patent upon it.

I assure you that such is not the case, and that the Secretary meant that I should draw from my butter-making experience, limited though it may be, a few suggestions that would be beneficial to the butter-making fraternity at large. If I am unable to give a point to any one, I may be able to prod some fellow who does know, so that in the end, the results will be even better than they would have been had I given a point directly.

Every butter-maker knows there can not be any fixed rule for handling cream to make a first-class article, for the many varying conditions and surroundings make it necessary to change the treatment from day to day.

The work I am familiar with is making butter from cream separated with a centrifugal separator. In the first place, I receive the milk at the weigh-can myself. I believe it is half of the battle to be a good judge of milk, having as it does so many different flavors. If I find any that will not come up to the standard I reject it. When milk is received, I heat it to the temperature desired—usually eighty-five. Then my separator is started. When I get through separating I add my starter, and again see to the temperature of the cream. I believe in high ripening and long cooling, for the most of my premium butter is made by this process. Cream ripened as high as seventy and seventy-five has given me good results. I do not believe in low ripening for several reasons that I will not take time to explain. As to starter, I do not use any at all in the spring and summer, when the cows can get the good, sweet grass which makes the butter with that high aroma, about which we hear our commission men speak so much. Starters are, in my judgment, to overcome the stable conditions when the cows can not get the good, fresh air and sunshine that God intended them to have. I believe in exercising good judgment in every detail of the work, especially in ripening the cream. I always stir my cream a great deal during the ripening process, and watch the development of the acid very closely. I get the best results from a commercial starter, or one made of skimmed milk. I skim a heavy cream for butter-making, then add a good starter. In this way I can nearly always get a good flavor. I think fifteen to twenty per cent. of starter is all right, if it is a good one.

I like my cream to have a velvety appearance in the morning when I go to churn. Then the temperature is looked after, and if found too warm, crushed ice is used. On the other hand, if found too cold luke-warm water is used. When the desired temperature is reached the cream is strained into the churn, color is added in the desired quantity; then the churn is started and, if everything is right, in about twenty-five minutes the butter has come in fine granules about the size of wheat grains. Then the buttermilk is drained off, water is added to the butter to wash the milk out. When thoroughly washed, I take the butter out of churn to be worked. Salting comes next, and I have my own way of doing this work, as every other butter-maker does. Salting is a matter of taste, and the amount used depends upon, first, the amount of water in the butter; second, the market in which you intend to sell. I use three-quarters to one ounce of salt to the pound of butter, according to the size of granules and moisture. I moisten it with water the same temperature as the butter. This is done in order to prevent mottles and to dissolve the salt quickly. Then I give the worker a few revolutions, after which I let drain a few minutes, then finish working. The time it takes me to work my butter depends upon grain and body. I do not think there will ever be a time when we can have a fixed rule to work butter—it must be left to the judgment of the operator. After the butter is worked, then it is packed in well-soaked tubs, lined with parchment paper. Then the butter is struck off level with the top of the tubs, paper folded over the edge of butter and a cloth circle is laid on top of the tub, water sprinkled on the cloth and salt sieved on, after which the tub is nailed up and is ready for the market or convention, as the case might be. I believe every butter-maker should have a butter-tryer and learn to score his own butter; for how can we be good butter-makers without we know when we have a fine piece of goods? By the use of a tryer, butter-makers can score their own product every day, which has been a great help to me. Good judgment, cleanliness and a tryer go a great way in making good butter. Last, but not least, is that our butter-makers do not attend meetings of this kind often enough. I, for one, believe every butter-maker should attend such meetings and send butter for competition to these conventions. By so doing I have learned more about my business than from any other source.

The President: Mr. Schlosser, can't you say something on this subject?

Mr. Schlosser: I have seen lots of butter made, but I don't make it myself. I know something of the conditions required to make good butter, and I lay particular stress upon getting good milk. I think that is the greatest trouble with our creameries in the State of Indiana, and I suppose the same trouble exists in other States—the quality of the milk that we receive at our creameries. It is impossible to make good butter unless we have good milk to commence with. After the milk is received all right, then the butter-making depends on the skill of the butter-maker. Next to good milk, I regard cleanliness of great weight and importance. The butter-maker should, by all means, keep his factory thoroughly clean, so as to avoid the introduction of factors that are injurious and hurtful to the goods. We have no particular method. Each one of our butter-makers has his own way of making butter. If we have good milk, we have very little difficulty in making good commercial butter. We have not made the high scores that some butter-makers have, but we have made butter that commands the top market price for creameries, and I think this of more importance than to score high scores. While it is nice to carry away prizes, I like to make butter that brings the top market price. I realize that Indiana is slow in the creamery business. I would like to find out how many creamerymen are in this audience.

President: Those interested in creameries, will you please raise your hands? There are six persons. Now, in order to see where we are, how many of you in the audience are interested in the making of farm dairy butter or producing milk? (Twelve were counted.)

Secretary: I would like to ask Mr. Schlosser a question. I would like to know if there is one standard for show butter and one for market butter?

Mr. Schlosser: I think there is, to a certain extent. I think in our show butter, a little too much stress has been placed upon that high, quick flavor. If you can keep in contact with the dairy people along this line, you will notice that some of the butter scored up when it was made, and in about two weeks it will not score that high, and I think our conventions are going to the extreme a little bit along that line.

Mr. Welborn: I understood the paper said they dissolved the salt and put about three-quarters of an ounce to a pound of butter?

The Secretary: Yes.

Mr. Welborn: If he puts it on after the butter is on the worker and puts it on his worker, and works it in his butter, how does he keep it in the butter so as to get salt enough?

The Secretary: I don't know. Mr. Martin, what do you think about that?

Mr. Martin: It has been my experience that three-fourths of an ounce of salt is all our trade demands. Of course, in shipping to Chicago I use an ounce. I like the taste much better with three-quarters than I do an ounce.

The Secretary: Dry or wet salt?

Mr. Martin: Dry.

Mr. Welborn: There is quite a difference between dry and wet salt.

Mr. Drischel: Mr. President, do I understand that the paper stated that this gentleman does not use starters in the fall and winter months? Of course, it alludes to the summer months. I am not in the creamery business, but I am in the cheese business, and I know at the present time our milk runs from eight to ten degrees, and we have to reduce it four or five, and I would like to know about the ripening of the cream to get better results.

The Secretary: I understood the paper to say that he uses a starter, except during the summer and spring months. For the butter he sent to this Convention, he used a commercial starter.

The President: Although no motion has been made to that effect, I think it would be proper for the appointment of a Committee on Resolutions. If somebody will make a motion to that effect, I will act accordingly in the selection of a Committee, or else I will make the appointment of such a Committee by general consent. The earlier it is appointed in the session, the more time it will have.

Among the other dairymen and creamerymen in Indiana that we have had occasion to be proud of, one who has long been a member of our State Dairy Association, and a prominent butter-maker, is Mr. Newby, of Spiceland. He has been showing butter at the meeting of the State Dairy Association and also at the Annual State Fair at Indianapolis for some years, and while he has not always won the highest prizes, I think he has probably been more successful than most of the exhibitors, and from all I have been able to learn of the work of his creamery, he is a very successful worker; and was asked to discuss the question, "Does It Pay the Butter-Maker to Exhibit?" Mr. Newby is not with us today, I regret to say, but the Secretary, I believe, has his paper, and will present it.

The Secretary: Mr. Newby impressed me as the biggest man in a small place that I have found in Indiana creameries.

DOES IT PAY THE BUTTER-MAKER TO EXHIBIT?

HERBERT NEWBY, SPICELAND.

In answering this question I shall only attempt a short outline of the subject, hoping that a discussion will follow which will bring out all the points any one may wish.

In the first place, I would say if the butter-maker enters the contest simply for the dollars and cents in it, and with his mind fully made up that he makes just as good butter as any one, and that there can not by any possible chance be another tub entered that will score higher than his, then it will not pay him, for he may not know it all, and if his butter is at fault, and is scored low, he will not believe it was right. There are possibly twelve tubs of butter entered here, at a cost of $6 to each butter-maker, competing for prizes to the amount of $75. Where is the pay? Unless the butter-maker is ready to profit by friendly criticism and by the scoring so that he may know whether he has too much or too little color, too much salt, or if by putting in a little more he could have been perfect there, and have increased the flavor one or two points; if each fault is noted in the scoring, and a suggestion offered as to the way to overcome the fault, then it pays, and pays big, not only in possibly getting enough money out of the contest to pay all expenses, but by knowing where he is at fault, and the possible remedy. Then he can or should be able to make a better tub the next time, if he is a man who is up-to-date or equal to the emergency. There may come times in which the surroundings are such that things over which we have no control may cause us to score low, but if he is an educated butter-maker, he will not only be able to make a tub of butter which will score high, but to repeat it; for any one may make an occasional tub that will score high, but if he can turn around and do it again, it shows that he understands his business.

At one contest the writer entered, our butter secured first place. That tub was brought home and the next day after being scored was started for market. The returns came back; all the butter was alike—poor flavor, one cent per pound below quotations; three pounds short on the tub in weight, the same as previous shipments. We at once changed houses. Result—Full weights, top quotations. The creamery directors had been thinking the butter-maker was at fault, but soon changed their minds, as the last firm continued to give satisfactory returns. Did it pay? Again we entered two tubs made exactly alike, except one was cooled by placing ice in the cream, and the other the ice was put in the water underneath the cream. The judge said: "You are using poor ice in your cream or have a leak in the vat somewhere." Difference in score, two and one-half points.

Again we made an entry. The judge said: "Flavor unclean; would advise you to discontinue use of live steam in the milk." How did he know we were doing so? We were, however, at that time using live steam to lift the milk, and to heat it to the desired temperature for separating.

Again, I would say, it sometimes means a job, and a way to make a living for a butter-maker to know that he can make a tub of butter that will score high, and not only know he can do so, but be able to produce the results; and this he can not do unless he keeps up with the crowd by exhibiting his make of butter where he can compare it with the make of others.

President: We have a few minutes for the discussion of Mr. Newby's paper, and I hope that some of the friends that are interested in this subject will discuss it.

The Secretary: Mr. President, I notice Mr. Johnson, whose paper I read a few moments ago, has come in. If you have any questions to ask him, he is now here to speak for himself.

President: Mr. Johnson, please step forward.

The Secretary: Mr. Welborn had a question about the salt.

Mr. Welborn: The question I asked in regard to the salt was: Was dissolving the salt three-fourths of an ounce to a pound of butter sufficient, or was there a difference between the dissolved salt and dry salt?

Mr. Johnson: I think it dissolves in the butter more rapidly. I nearly always put water with the salt. The butter that is over here now is butter that was made that way.

The Secretary: Is the salt dissolved or just made wet?

Mr. Johnson: No, it is not entirely dissolved; part of it dissolves.

The Secretary: Can you mix it through the butter as thoroughly when wet as if put on dry?

Mr. Johnson: I think we can. We most generally sprinkle the salt on dry, and then moisten it with water.

Mr. Schlosser: Mr. Chairman, may I ask if he had any trouble with mottled butter?

Mr. Johnson: I can say that I never did

Mr. Schlosser: Did you have any trouble in the beginning of your butter-making experience?

Mr. Johnson: Yes, sir; and I use water the same temperature as the buttermilk, and keep it the same temperature all the way through the whole process, and I find it a great help.

Mr. Schlosser: Did you find that mottles are more liable to appear at this time of year than in summer?

Mr. Johnson: Yes, sir.

Mr. Martin: How many times do you wash your butter?

Mr. Johnson: It is owing to how warm it is when churned. If all the butter does not raise out of the milk like it ought, the granules don't stand up in it, I wash three times, and I wash until I get all the milk out; the butter otherwise is washed twice. I have known butter that once washing was sufficient.

Mr. Schlosser: What temperature do you churn this time of year?

Mr. Johnson: About 58 is my practice.

Mr. Schlosser: And in the summer when the weather is warm—June and July?

Mr. Johnson: Down as low as 52 to 56.

The Secretary: We were just discussing whether it pays to exhibit or not, Mr. Johnson. Has it paid you?

Mr. Johnson: I think it has.

The Secretary: Why?

Mr. Johnson: Because I took three premiums last year, and won $152 on the three exhibits.

The Secretary: Any other reason?

Mr. Johnson: Well, yes. We have got to keep pace with our successful butter-makers, and that is the only way I see for we butter-makers to keep up. Without we exhibit, we can't be good judges of butter. We must be good judges of butter before we are good makers.

The President: Mr. Schlosser, you have exhibited butter more or less from your creamery. Does it pay you to exhibit?

Mr. Schlosser: It certainly does. The only way a person knows what he is doing is to rub up against other butter-makers, and find out his faults; that is the best place to find out where we are lacking, and by trying to improve on these things. Butter exhibits are certainly a good thing for the butter trade, and with possibly one exception, as I said awhile ago, we lay too much stress upon the high flavor. If we could correct that fault, it is going to be more benefit to the dairy interests. We want to manufacture butter that will reach the consumer in good shape.

The President: Who else is there in the room that has exhibited butter besides Mr. Johnson and Mr. Schlosser?

The Secretary: Mr. Drischel can speak for the cheese industry.

Mr. Drischel: To be candid with you, I am ashamed of the creameries and factories of this State. It is an actual fact that the exhibits have been very poor at the State Fair, there being only six or eight tubs there. In fact, just as Mr. Schlosser said a moment ago, I like to rub up against men that make us compete, and I am ashamed that the cheese men did not come here and discuss this question of making cheese, and advance ideas on the cheese problem among the creamerymen, but I am sorry to say their exhibits are very few here today. They ought at least to have thirty tubs of butter, and there are only three cheese in the room. I like to see the creamerymen and cheese men get together and confer and advance the creamery interests and the cheese interests.

President: It may not be out of place for me to make a statement here in connection with the exhibits. During most of these years that I have been at all interested and in a position to have anything to do with the selection of the judges, for examination of the butter and cheese shown before the Indiana State Dairy Association, the greatest care has been exercised to get some one to judge whom we believed was capable and fair-minded, and for several years we have had a gentleman from Chicago, who has stood high in the city of Chicago for his work as a judge. I have always thought we have had fair judges where there has never been a question about their integrity or even their ability. For our State Board of Agriculture exhibits we have had judges that were capable men. I know the State Board of Agriculture sent away up into Wisconsin to get a man that stood high as a judge, but in spite of these facts which I have called your attention to, I have had correspondence and have had interviews with creamerymen in our State who have shown at these exhibitions and who have been "sore," who have felt that they did not have fair treatment. It has seemed to me that these men have not looked at the subject from the broadest standpoint, and that is the only way to make progress. When you consider that in the judging of the products shown at this Association, every year, so far as I can recollect, we have had judges who have known nobody showing; and that all the exhibits have been shown by numbers, and the judges were entirely ignorant of who made the butter, I think any charges made of unfair treatment are founded simply on imagination. I don't believe there is a Dairy Association in the United States that has offered fairer treatment to its members than the Indiana Association, and I feel just exactly as Mr. Drischel. The opportunity which is given in these exhibits when there is a generous money premium offered gives a good opportunity for persons to show their butter, and also secure some reward for their labor. I think that statement is proper under the circumstances.

Now, we have with us today Dr. Hurty, who is Secretary of our State Board of Health, and, owing to the absence of some speakers on the morning's program, and as Dr. Hurty wishes to get away early owing to pressure of business, I have seen fit to change the program somewhat, and hear him at this time in place of Mr. Commons, who is not here. I will invite Dr. Hurty to come forward and discuss the subject of

WHAT OUR PURE FOOD LAWS HAVE NOT ACCOMPLISHED.

DR. J. N. HURTY, INDIANAPOLIS.

Mr. President—The pure food law of Indiana was passed in 1899, and this Association had something to do with that very excellent law. The British Food Journal, in its August number, 1901, gives high praise to this law, and also to the rules of the State Board of Health establishing standards and defining adulterations.

As I say, it was passed in 1899, but no provision was made for its enforcement, and, as we all know, no law will enforce itself. It went through without any trouble whatever, but when it came to an appropriation to enforce it, then the Legislature stopped right there. The State Board of Health has never done anything towards its enforcement, although charged directly with its enforcement. As I said, this is because no appropriation and no laboratory has been furnished with which to effect enforcement. It is obviously impossible for the law to enforce itself. The State Board of Health presented this fact to the Legislature which passed the law, but no heed was taken. In 1901 the State Board of Health again brought to the attention of the Legislature the fact that the food law remained dead upon the statute books because of a lack of a laboratory and an appropriation. A bill was presented, which provided for the creation of a laboratory in the State House at Indianapolis, under the control and direction of the State Board, and providing $10,000 for the enforcement of the pure food and drug law. Every one knows that analyses must be made if adulterations are to be detected. As analyses can only be made in a laboratory, and as the work must be done by specialists and not by general chemists, it is plain that the public laboratory must be created or the pure food law left unenforced.

Several members of the Legislature suggested that the laboratory should be taken to Lafayette, or rather that the laboratories of Purdue University should be used. This idea is obviously impractical, because the laboratories of Purdue University are teaching laboratories, and are filled from morning to night with students. The professors must give all of their time to teaching, and, therefore, could not undertake the work. The analyses of students would not be accepted in courts. Unless it is desired to turn the University into a police board for the enforcement of the pure food law, and unless it is desired to, in a great measure, interfere with the efficiency of the teachers and the work of the students, the laboratory should not be there. If the work were imposed upon the University, the pure food law, and also the health law, would have to undergo amendments, for these statutes now place the enforcement in the hands of the Board of Health. Not to give the machinery for enforcement direct to the body, which is charged with the work, would be impracticable and unbusinesslike. Another point appears against the college proposition, and that is Lafayette is not centrally located, and time is frequently an important factor in food and sanitary analyses. Indianapolis is centrally located, and is most easily reached of any city of the State. Lafayette can not be easily reached from considerably over half of the State, except by passing through Indianapolis. This fact shows that of necessity there would be considerable delay in transportation of samples and receiving of reports. In the aggregate this delay would be something very great. Another fact which shows that such a laboratory would be derogatory to the University appears when we remember that the analyses would frequently be followed by prosecutions, and the analyst, say he was a professor at Purdue, would be dragged from his teaching work to give testimony in the courts in some far distant part of the State.

If established at all, the laboratory should obviously be in the State House at Indianapolis, directly under the control of the State Board of Health. It seems to me that this Association should take an active interest in the enforcement of the pure food law. The losses to the people of the State on account of adulteration are something enormous, and the immoral effect is very great.

I wish to present some figures for your consideration which give an approximate measurement of the amount lost, due to food adulterations. There are, in round numbers, 2,500,000 people in Indiana. In statistics it is customary to count one person in every five as a wage-earner, and, on the average, this will represent the truth. One-fifth of the population of the state is 500,000. The average wage in Indiana, as secured from the Bureau of Statistics, is eighty cents a day, and, therefore, there is earned in Indiana daily as wages not less than $400,000. It is well known that three-fourths of the average wage goes for food, and, therefore, three-fourths of $400,000 is $300,000, the amount spent for food daily in Indiana. If we assume that 5 per cent. of the food is adulterated (and I am very sure this figure is very low, indeed,) then 5 per cent. of $300,000 is $15,000 a day lost by the people of Indiana in buying adulterations. The facts are that probably 15 per cent. is nearer the true figure, and this would make $45,000 a day as a loss which is endured. Why allow this foolishness to go on any longer? Every man, woman and child in the State should be interested and should appeal to the Legislature for relief. Of course, it would not be possible with the most vigorous work and constant prosecutions to stop all adulterations, but it could be at least changed, and in all probability very materially reduced.

A recent adulteration has come to my knowledge, which is called "Kremo." "Kremo" is a substance advertised by a Chicago firm for the purpose of stretching cream and milk. Their circular is a long one, and therefore I will only read a few extracts. It says:

"Kremo is dry cream, gives a body to thin cream or milk; will permit of the mixing of cream with milk in such a way that it can not be detected; it produces qualities of richness, flavor and body. Kremo is the result of years of experimenting. It is now used throughout Europe, and is rapidly being adopted in the United States. It is guaranteed harmless, and also to pass all pure food laws anywhere."

It is plain from the very face of the circular that a fraud is contemplated. An examination of the sample of stuff they sent out labeled "Kremo" proves it to be powdered gelatine. The circular offers to sell this "Kremo" (powdered gelatine), packed in one, five and ten-pound tins at $1.25 per pound. In commerce the article is worth not to exceed sixty cents. The directions given in the circular are simply to dissolve the "Kremo" (one ounce) in a pint of water, being sure to make an even and perfect solution. This being added to the cream will, of course, give thickness and body after thorough mixing with the cream without any very severe agitation. Milk may be added, one-half as much milk to be used as there is cream. I have found several samples of cream upon the market in Indiana which contain gelatine, and very possibly the trick was learned from the Chicago rascals. Process butter may be found in almost every city and town in Indiana. I calculate that an amount of water is sold each day in Indiana in butter for which $150 is paid. The encouragement which has heretofore been extended to those who would adulterate foods is very great, and it is certainly time that Indiana should awake, establish a laboratory and make an ample appropriation for the prosecution of the rascally food adulterators.

President: I will appoint a Committee on Resolutions, to consist of Mr. Burnside for chairman, and Messrs G. P. Newsom, Drischel, Martin and Henley. And it is necessary for us to have an Auditing Committee; and I will appoint on that committee Samuel Schlosser and A. J. Newsom.

Mr. Burnside: Mr. Chairman, I want to ask you to excuse me from serving as chairman on the Resolutions Committee, for the simple reason that I will be absolutely worthless on that committee. Anything else I can do for this Association I am willing to do, but to serve on the Resolutions Committee, I can not do. It is something far from anything I like to do, and you want a Committee on Resolutions that is capable to do it, and I will ask you to please excuse me from acting.

President: You will serve on the Committee?

Mr. Burnside: Yes, sir.

President: I will ask Mr. Drischel to act as chairman.

Mr. Drischel: I think it will be better to appoint some other member, for I am not acquainted with the work at all.

The President: I am going to request Mr. G. P. Newsom to act as chairman. There are one or two other committees that I believe should be appointed—one a Committee on Nominations and another a Legislative Committee.

The Secretary: Before more leave the room, there are a few notices that ought to be given out, if you can wait a few moments.

President: We will not adjourn until we get through our business this morning. I would like to have you consider the propriety of appointing a Committee on Nominations.

Mr. Shugart: I move that the Chair appoint a Committee to present nominations. Motion seconded and carried.

President: I have called up the matter of the Legislative Committee for this reason: There is always a disadvantage in having a committee appointed for legislative matters just at the time the Legislature convenes. If a committee of three, for example, should be appointed well in advance it would be able to discuss matters and get ready between now and the next meeting of the Dairy Association so that things would be in proper shape, and that committee could be continued for the next year, because a session of the Legislature will convene in a trifle over a year from now. Therefore, I believe it is a good business proposition that that committee be appointed now. I will appoint as the Committee on Nominations Mr. J. V. Shugart, J. M. T. Welborn, Samuel Schlosser, James M. Knox and Perry L. Johnson.

Mr. York: I wish to extend a cordial invitation to the members of the Association to come and see the workings of the State Reform School for Boys, right nearby the town.

President: In behalf of the Association I will accept your invitation with thanks, and hope that many of our visitors will take advantage of the invitation.

The Secretary: I wish to ask that you remain out of the dairy room until after dinner, because the judges have not quite finished their work; I would like to receive the membership of those who have not paid.

President: Now, we will have a selection by the band, and then we will adjourn.

Music by the Reform School Band.

Adjourned until 1:30 p. m.

AFTERNOON SESSION.

December 18, 1901, 1:30 p. m.

PRESIDENT'S ADDRESS.

"DENMARK'S MESSAGE TO INDIANA," BY C. S. PLUMB, LAFAYETTE.

President: I wish to call the attention of those who are here to a display of dairy supplies around the corner in Machinery Hall, and I trust that all persons that are here will make a call there, showing some appreciation to the dairy supply people for sending their goods here.

I wish to call your attention to the subject of "Denmark's Message to Indiana," which I will present to you as the presidential address for this year.

Last year it was my privilege to cross the ocean and spend a little time in the country of Denmark. Inasmuch as Denmark is one of the most remarkable dairy countries in the world, and we here in Indiana have a great deal to learn and to do in dairy lines, it has seemed to me that it is proper to bring a message from Denmark to Indiana, or make an application in our own State to some of the conditions that have existed in that little country.

Denmark is a small country. Denmark proper, not including Greenland, has about 15,000 square miles of territory, while we here in Indiana have nearly 36,000 square miles. So, as far as area is concerned, you can see at a glance that Denmark is not half the size of Indiana. We have a population in Indiana at the present time of about two and a half millions, while Denmark has a population of about two and a quarter millions, so that this great commonwealth, in population outnumbers the Danish country.

Twenty-five years ago Denmark was a grain-growing country. The farmers of that region were growing crops of wheat, rye and the other standard grain crops of northern Europe, and were using them for home consumption, or shipping abroad, when it dawned upon them that they could not successfully compete with the great grain-growing countries of North and South America and France, and they realized it was an entirely impracticable thing for them to compete with this grain-growing region. That was a wise conclusion for them to come to, so instead of continuing growing grain as most countries would do, and as we are doing very extensively here in our own State, through the assistance of the Danish government, interested individuals from her people were sent to the British markets to see what the people of Great Britain—an immense population—demanded in the way of foods that could be supplied by Danish farmers. The result of it was that they reported to the Danes that England was a great consumer of dairy products and of bacon and pork. Then the people of Denmark took up the problem of the development of the dairy interests of that country. They sent commissions to England and Ireland to study the dairy business and the bacon trade, and I am sure that they adopted every method that they could to improve their own dairy knowledge and practice. The government had experts working on the subject, and gradually Denmark became the center of dairy knowledge. Then agricultural schools began to be established over there, and they had their professors of dairying and Prof. Fjord, who died a few years ago, became in his time the most famous of dairy investigators, and probably no man, unless we except Babcock in this country, has ever done more to promote the dairy interests of the country than Fjord did for Denmark. Now, what was the result of this investigation? It turned the Danes away from the production of grain into the production of a class of goods that the farmers could make that would furnish them a market that they could compete with the rest of the world for; and today Denmark controls the butter market of England; it controls the butter market of the great Manchester eating district and London; and if you go to the other side of the water among the big commission houses that handle butter products you will find that the Danish butter sets the standard of prices for the butter from the rest of the world.

At the present time there are in the State of Indiana probably somewhere in the neighborhood of 800,000 dairy cows. Now, remember, that Denmark is not half as large as Indiana, but, according to the last statistics which we have from Denmark, in 1900, they had in that country 1,713,735 cows, and they don't grow beef over there, but they are used almost exclusively for dairy purposes. There were 456 head of cattle for each 100 acres, and there were 756 cows for each 1,000 inhabitants; so, you see, you have a very interesting situation in that little country, and it will give you an idea of the degree to which the people there give attention to dairy cattle. In 1900 Denmark exported 124,500,000 pounds of butter. Most of it was sent to Great Britain.

About three-fourths of the people of Denmark are farmers, and there is only one large city, and that is Copenhagen, with, as I recall it now, about 300,000 population. In many ways one sees the importance of that city and all Denmark in dairying. In Copenhagen you go to a restaurant and have placed before you for drinking a bottle of milk, and you will notice at once the superior quality of that milk. I think wherever you might be likely to go in that city you will find a high class of milk. If you would look into the method of supplying that city with milk you will find at the present time they have in Copenhagen four large milk supply houses. One night, about 11 o'clock, the president of one of these companies took several, including myself, to the Copenhagen milk supply company's depot. It is an immense establishment, and a whole train load of filled milk cans came up alongside of this milk supply company's place. The milk is rolled out there, and brought into the receiving room, where it is weighed, and samples taken for testing it for bad odors, etc., and the milk goes through various processes according to the demand. They run the milk through sand filters, the only place where I have ever seen anything of the kind done, the milk being forced through sand to remove the impurities. A thorough method that is necessary for the production of the highest class of dairy products is followed out in that house, and finally the milk is distributed all over the city of Copenhagen from milk wagons. At that time they employed in the neighborhood of 500 men, women and children to handle the enormous amount of milk received there every day. That included, of course, the drivers and the persons connected with the shipment and all. There were also firms in the city that prepared Pasteurized milk exclusively, so that, as we looked into the matter, we found that the city of Copenhagen was supplied with milk of the highest class of purity. I don't suppose a similar example can be found in the United States of the method adopted to give the people pure milk that is found in that city, and the government of Denmark is back of it. They have their professors of dairying to take steps to see that everything is done to produce a first-class article.

Now, you are interested in dairying. I made a visit to the Agricultural School, which is in the suburbs of the city, and by chance struck a very fortunate day. I found it was the day they were having an examination made of the shipments of butter. Denmark has a law by which they can compel the owners of creameries to send into the experiment station there, on the call of the superintendent of the station, tubs of butter or small barrels of butter, for examination by the experiment station people a given number of times per year. The butter is subject to their order, and the owner of the creameries can never tell when he will be ordered to send a tub to the experiment station. It is received and examined with great care and scored, and then a report is made back to the owner of the creamery as to the character of that butter, and the owner of the creamery has an opportunity to compare it with previous reports from his creamery, or with reports from other creameries. This is a practice that I have known no other country in the world to follow. The result of it is that the Danish people are absolutely forcing the producers of butter in their country to make a class of butter that will supply the demand that the Danish government wants to supply. The result is that Danish butter shipped to England is more generally uniform in character, and though criticisms are made, the people there regard them as a good thing and in their interests rather than detrimental and objectionable features. When I went into that butter room there was a large number of tubs of butter, and they were being inspected by men who went over and graded the butter, and, if I recollect correctly, each creameryman is obliged to ship in at least four times a year, and these casks of butter stand for official inspection. I think this system has certainly worked a great deal towards the production of a uniform quality of goods, so that the rest of the world might know what they could depend upon from the Danish government.

There are two classes of creameries in Denmark that are quite common. There are large coöperative creameries, and I visited one which was in the process of construction, very well along towards being finished, that they told me when completed would be the largest creamery probably in Europe. It was capitalized at $100,000 in American money. Think of a commercial creamery being capitalized in a little country like that at $100,000. They had large rooms for the curing of cheese; a large number of centrifugals and great milk vats, and the whole plant was made in the finest and most substantial manner. They had absolute confidence that it would be a paying proposition. Right in the same town with that large creamery we also visited a farm creamery, just like going out on any dairy farm in Indiana, but here was a building that had a nice tile floor, and a splendid equipment of modern dairy apparatus, and the machinery run by power. There were the separators, and churns, butter workers and all, so that if that same sort of plan had been adopted in Indiana you would have thought, "here was a coöperative creamery," but it was not; it was owned by an individual. The methods of preparation are of the most improved sort. I would not say that the individual dairymen of Denmark today are in advançe of many of the individual dairymen of the United States; in fact, I don't think they are, but the methods of preparation are commendable over there because they are so uniform. The government officers keep such a close check that it results in a quality of goods so uniform that the rest of the world knows what to expect when it purchases butter of Denmark.

In connection with this same topic, though you might not possibly think it a dairy subject, however, is the swine industry.

In 1861 there were only 301,000 pigs in Denmark. That is not a very large number. In 1898 there were 1,168,000. Think of the growth. The exports of hams and bacon from Denmark has grown from 9,120,000 Danish pounds, in 1878, to 129,701,000, in 1898. Today there are twenty-five coöperative slaughter houses for butchering pigs in Denmark, and in 1899 they killed 729,000 head, which were valued at $8,000,000. All of this pork packing, although they are known over there as bacon establishments, is under one common head, with the central management at Copenhagen, and while there is in one town, for example, a certain number of farmers that are supplying pigs to that establishment, they are all identified with the other twenty-four in the country. I visited what they called one of their small pork-packing establishments, and the gentleman who was superintendent of it could speak English, and he said there were 800 farmers in that immediate territory that had stock in that company, and that were bringing pigs there every day. They brought their pigs there, and they were purchased. Each one bore his share of the expenses of managing it, and each man got his share of the profits, as shown in premiums or dividends that were declared. The idea of coöperation is a very strong factor in Denmark in other lines as well as in the dairy line and in the pork-packing establishments. Now, the Danes found these two things went well together. I know they sent a commission over to Ireland to study the method of preparing ham and bacon for the English market, and they went there and worked with the Irishmen, and then they went back to Denmark and began to develop the bacon business. It was only a year or two ago that the Irishmen sent a committee over to Denmark to study the Danish methods. So, you see, the progress that they have made. If you will go into the business houses of the commission firms in Smithfield market in London, or in the Manchester district, you will find that the standard for the pork which they handle, is based on the bacon and hams of the Danish. They command the highest prices, and almost all, excepting a very limited amount of English bacon, is quoted on the basis of Danish prices.

I have called your attention to these things as of great importance for this reason: Denmark is not a rich agricultural country when it comes to wealth of soil. There is a great deal of low class, sandy land. The people there were not wealthy, and would not be called rich in one sense as the people in some regions are today, and they had some very great problems to deal with; and I think they have demonstrated to the rest of the world that they have successfully solved the problems.

What sort of a message does Denmark bring to us? In the first place, the farmers in Indiana should grow less grain. Why? If you people but think of it, we are one of the great grain-growing States of the Union. Within the last ten years we have ranked among the fifth and sixth great wheat producing States, although the world thinks that Kansas and the Dakotas are the great wheat-producing States. The wheat which we produce we ship in great quantities outside of our borders. Our farmers today are farming land that is worth from $50 to $100 an acre, and more than once in the last ten years their wheat crops have been a failure; but when it comes to the production of live stock, we occupy certainly, of the central West, as favorable location as any other State, and when it comes to the production of dairy products we occupy a situation that need not be misleading. In order to maintain the fertility of the soil of Indiana we must grow more live stock. That is evident on its face. It is an argument that is presented to the people all over the United States. If we grow more live stock, why not grow more dairy stock? If you were to make an examination into the market supply of the cities of Indiana, you would be surprised at the quality of milk sold. Today, at the dinner table, I said: "I believe Indiana is a first-class State for a young man to succeed in." And I said that there wasn't any city in the State of reasonable size where I would hesitate to go into competition with anybody in the production of milk for city consumption. The same thing would apply to any branch of dairying, the production of butter, or any other commodity that the dairyman may produce. Now, you know something of why the farmer should go into the dairy business. I do not hesitate to tell you that that State which specializes to the greatest degree in the most intelligent manner, is generally rated as the most successful from the agricultural standpoint. I hold that the State of Indiana, agriculturally speaking, in the hands of general farmers will not be as famous a State, and the farmers will not be making the money that will be made in the State where there is specialization. I don't mean that a man should engage in one line and produce nothing else, but specialize on some one thing in addition to other work. If there is any message that Denmark can send to Indiana, it is that the farmers of this State should grow less grain and should study the dairy business intelligently, and persistently work out the problem of dairy improvement; make more and better butter, and more and better cheese, and more and better milk; read the dairy papers more; patronize the dairy schools more; take part in the work of the State Dairy Association; require as much as possible of the

Experiment Station and National Department of Agriculture to insist on the development of the dairy knowledge, and so develop the dairy side of our State so as to make it a profitable and also an attractive occupation. If the people up in Denmark in that little region can take up the dairy business under the adverse conditions which they did, and can make it such a successful business so that little Denmark can control the standards of the markets of Europe—can set the standards for other nations to follow—I say our own State of Indiana, by intelligent coöperation of our farmers and our dairymen can so promote our dairy interests in this State that it will result in largely increasing the wealth of our people.

There are very few people that take advice from other people, and there is no danger of any one line of business being overdone, unless it is so easy that people naturally take it up; but I do say that if this State Dairy Association can advance ideas that will force the importance of dairying more on the people; if we can rejuvenate some of our creameries; if we can get our patrons to support creameries more liberally and in other ways study the interests of our business intelligently, I am sure that while we may not all realize that it is a message from Denmark, nevertheless, it will be a message from what may be considered the most progressive dairy nation in the world. And so I think it is a thing that it will pay our Indiana dairymen well to ponder over.

Mr. Drischel: I would like to ask what grade of dairy cows they have in Denmark?

President: The type of dairy cow they have in Denmark, that is, the most popular and most common, is a red cow, a trifle smaller than a Shorthorn, and of quite a dairy type, not beefy in character. I should say a type that would not weigh, on an average, more than 1,000 pounds.

You might take an old-fashion Shorthorn cow as an example. I would like to tell you of a very interesting sight. I visited a dairy school on one of the Danish islands, and we went through some of the buildings and out through the cow stable and into the barnyard, and into a lane and lot. As we went into the lane there was coming up from the field a bunch of sixteen cows and a bull. These sixteen cows were all fastened together by rope halters, and a man was riding astride of the bull and leading. He had a halter in his hand, and this was connected with the cow right behind him—just behind the bull—and then there were four cows abreast, and the halters were linked together, so that these four cows all came along together, and then the halter of the next cow behind was connected with the cows in front, and these four were fastened together, and so there were four sets of fours all fastened together. They all came up the lane, with the man straddle of the bull, to the barn, and all waited while he got off, and each set of fours were separated by themselves, and were tied up outside the barn. This will give you an illustration of how gentle they were and how easy they were handled. In going through the country I saw at one place, as near as I could count from the car window, about a hundred head of these cows. They were all tethered in a field by ropes, and as they grazed they ate along one line of browsing, when they were moved forward to eat over another place clean, and so they did not tramp down the grass except where they were grazing.

We will hold Mr. Commons' paper over, as he is not here. The Secretary will read the report of the judging and scoring of the butter, and later Professor Erf will have something to say about the butter exhibits.

Scores read. See page 118.

President: The next thing which we will have upon our program will be the discussion of the exhibits, method of scoring it, etc.

Ladies and Gentlemen: It is with great pleasure that I introduce Professor Decker, of the Ohio State University, in charge of the dairy work at that institution.

Prof. J. W. Decker: Mr. President, Ladies and Gentlemen—I am glad to be with you today and get acquainted with the dairy people of the State of Indiana. Professor Erf and I have been judging the butter and cheese which are on exhibition in another room in this building, and we propose to bring some of these samples into the hall to demonstrate some points.

Butter and cheese are sold on the market according to certain points in the quality. The consumers want certain things, and the dealers have to cater to the requirements of the market. Now, in either butter or cheese, the most important thing in the quality of the article is its flavor, so we place flavor as the highest percentage of the purity of the article, or the quality of the article, counting 100 points as perfect. In butter, for instance, we want a rich butter flavor, and in some cases the butter lacked flavor. It does not have any disagreeable flavor; it lacks flavor, and it consequently has to be marked off on the score. The score card we used this morning gives fifty points for perfection in flavor, the quality of butter, then, is based on its flavor. Then there is the matter of grain—the grain or body of butter. Grain and body are not necessarily the same, but are based on the ratio of twenty-five points, or 25 per cent. in the 100. When butter is broken, it ought to present a grain that is like broken cast iron. That shows the grain. If it has been too soft or has been worked too much, the butter will be pasty. When you consider body, you want the butter to be fairly solid, and not too much water, or be too slushy, and I want to say there is a tendency to leave too much water in the butter.

The color should be a light straw color. The tendency in some places to be quite light and other places a deeper color. The markets, as we go south, require a deeper color, but more important is the evenness of color.

Butter may be speckled or spotted, and that is what we called mottled butter. There may be two causes for this. One an uneven ripening of the cream, but more likely the uneven distribution of the salt. Wherever the salt strikes, it deepens the color, and, consequently, when the salt is not evenly distributed through the body of the butter, it leaves the butter streaked, and sometimes it is said that the butter must have come from the milk of a brindle cow. The people in Boston, who think they know beans, when they see mottled butter say that the butter has been mixed with lard, and it is hard to convince a man in Boston that such is not the case, and so it is necessary to have an even color. Then the matter of salt. The salt should be dissolved; should not be left in the granular form. It ought to be dissolved and evenly distributed. It ought not to be too high or too light. There is a certain standard in the market, so that salt is one of the important things. And then there is the matter of package. Package is about five points. Professor Erf and I in discussion this morning thought the package ought to come in for a larger per cent., because of its importance. I should have said that ten points to salt and ten to color. We have had some of the packages brought in here that we may demonstrate in a way what is meant by these points that I have just described.

Cheddar cheese should have a good flavor—a cheese flavor. The flavor develops with age. There may have been other flavors brought into the cheese by bad milk, or gassy milk. One of the cheese this morning had to be scored down, as it evidently had been made from bad milk. The texture of cheese should be such that it breaks with a flinty break, the same as you would break a piece of stone, and, of course, it ought to show some butter fat, and it should not have too much whey in it, as it can't be handled and shipped, and, consequently, it should not be too moist. There is a tendency to put water in the cheese to make it appear as though it were rich. The cheese, on the other hand, ought not to be bitter. In the score cards used by this Association there is a point called quality. Quality, as used by the Canadians and English, is the cured condition of the cheese; how well it has been cured, so it will dissolve in the mouth, and this is called quality as separate from the term texture; and then there is the matter of color. Of course, the different markets require different shades of color. The color ought to be even. Salt is considered in the score card of this Association. Salt is really considered under the head of flavor and texture, because salt affects these points. Salt expels the moisture and gives color in that way to the cheese and its texture. If there is too much salt, it will make it mealy in texture. Salt also helps the flavor and checks the ripening. These are the points upon which the products have been scored.

We have tried to score carefully and honestly and show no favor, and score without mercy on the points where the products ought to be cut off. You are sending your product here to this convention that you may get an estimate of its value according to the market demands, and if we, as the judges, should not cut them on these points where we think they ought to be cut off, we would not be doing justice to you; and so we have cut off honestly and severely where we thought they ought to be cut. Now, about the quality of these products, and about the package especially. As Professor Erf and I went over the packages this morning, we discussed that. We did not agree exactly on all little points, because we have different markets in mind, perhaps; but we wish to bring out the market demands, and if Professor Erf will come forward I would be glad to have him show you something about what he considers right in the matter of package; and where we do not agree, we will tell you.

(Professor Erf and Professor Decker took the different exhibits and passed among the audience, and showed wherein the package could be improved upon, and explained why.)

Secretary: The butter and cheese are now the property of the Association, and they will be placed in the exhibition room, where you can go and see them, and if you see fit to taste them, do so.

(Some of the points mentioned by Professor Decker in regard to package.)

In packing a tub of butter, it is best to fill the tub a little more than full, and take a string or wire and pull across it and cut the butter off, so as to keep the top smooth.

A round package is not the best for dairy butter, for it does not fill up the space in a box for shipment. Bricks can be packed more closely together and shipped nicely. They may be arranged so as to place a chunk of ice in the middle.

It was a round print that received first place because it was better butter, but it could not be packed as nicely as the bricks. The one that took first prize was not overworked, and had a better flavor.

This other package of butter is square, but it is not wrapped right. It is wrapped with paraffine paper. This paper is not good. It should be a parchment paper.

Professor Erf: To the first in the creamery butter, we gave on flavor forty-eight out of fifty points. It had a trifle weedy flavor; that is the only objection we found to that. It was overworked a trifle; it was light and soft. The paper on top, as we have shown you, was not put on very neatly.

No. 2 had a bitter flavor, and could have been improved greatly by a starter. Then it had too much water in it for grain, and that threw it off on grain. Score, twenty-two on grain. Marked nine on color. It was mottled. It was perfect in salt and package.

No. 3 we marked flavor forty-five. It had a sort of a hay flavor—sort of a stable flavor. We marked twenty on grain, because it was overworked and greasy. We marked it five out of ten on color; it was too light. The package we marked four because it had too much of a circle, and didn't fit on the tub.

No. 4 we marked flavor forty-five. The flavor wasn't a clean flavor. Its flavor could have been greatly improved by a starter; some good, clean starter or something of that kind; and the grain we marked twenty-four. It was a trifle watery, and a little bit greasy. In color we marked off half a point; it was a little light in salt.

No. 5 we marked forty-six. It was off in flavor. It had a sort of hay flavor, the same as No. 2. It was perfect in grain, and also in color. It was salted rather high, which somewhat killed this hay flavor. The package was very good.

No. 6 was very rank and bitter in flavor, and we marked that thirty-five. We marked it twenty on grain, because it was watery—very watery. The package was very fine, and the salt and color were perfect.

No. 7 we marked forty-seven. The flavor was slightly rancid, no doubt due to the old cream accumulated for some time. We marked twenty-three on grain, because it was watery, mottled and slightly greasy. On color we marked it nine, because it was mottled; on salt nine and one-half, because it was too light; and then we marked it off on package, because it had salt on top.

No. 8 we marked forty-five. That was very rancid in flavor, old cream having been used. We marked it twenty-two on grain, because it was too watery; nine on color, because it was mottled; eight on salt, because it was too light and soft. These were the creamery products. Now for the dairy, we have as follows:

No. 1 we gave forty. It was lacking in flavor. It was not ripe enough. The flavor was greasy. A starter would have improved that decidedly. For grain we gave it twenty-two, because it was somewhat greasy. Gave it nine for color, because it was mottled; nine for salt, because it was light in salt; and then we marked it perfect in package, but we don't like wood packages.

A Voice: Why not?

Professor Erf: The reason we do not like these wood packages is because the butter absorbs the flavor of the wood, and that is a very important point.

No. 2 we gave flavor forty. It had a soap flavor. Now, the person that made this butter probably used common soap to wash the utensils. Sal-soda is a much better material for that. We gave nineteen on grain. It was too fine grained, and it was overworked and greasy. On salt we gave it nine, because it was gritty—the salt was not dissolved in it. Here is the package, the wood package. The wood odor seems to penetrate the butter, as it always has a woody flavor.

Mr. Creston: Why should that package have a wood flavor any more than a tub?

Professor Erf: A different kind of wood, and then there is more wood here compared with the amount of butter.

Mr. Creston: Is it wrapped in parchment paper?

Professor Erf: Yes, sir. In No. 3 we gave forty-two for flavor. You have the same kind here that you have in No. 2. You have a sort of soap flavor that can be remedied, as I suggest, by the use of sal-soda instead of common soap. We gave grain twenty-four, as it was slightly greasy. On color nine and one-half, because it was light. On salt nine and one-half, because it was gritty; the salt was not dissolved.

For No. 4 we gave flavor forty-four. It had a sort of a peculiar sweetish taste. On grain twenty-four. It was slightly greasy and overworked. It was perfect in all the rest of the points.

No. 5 had a pronounced hay flavor, and we gave it forty-seven. Grain twenty-four, because it was slightly overworked. Package we gave it three. As you notice, as has been explained heretofore, it is not a marketable package.

No. 6 we gave forty-six upon flavor. It wasn't ripe enough. It had a sort of an off flavor to it. It didn't have a rich butter aroma about it. On grain we gave it twenty-three. It was somewhat greasy, and somewhat overworked. We gave it nine on color, because it was somewhat mottled; eight on salt, because it was salted too lightly. There was very little salt in this butter, so we had to mark it down to eight; and the package was marked down, too, because it was not a marketable package. These are the scores for the butter; all the butter we have here. In flavor, I might say that the majority of the scores here might be greatly improved by using a good starter in your cream.

Professor Decker: Mr. President, perhaps this discussion that we have gone through has suggested some question in the minds of the audience. We will be glad to have questions asked and discussed.

President: I would like to ask if you have any comments to make on the cheese?

Professor Decker: I will say that the cheese we scored first was a comparatively new cheese. It had not cured, perhaps, as far as we might like a cheese to be cured, and consequently we could not mark it quite as high as we could if the matter of quality had not been considered. The matter of quality is an English term. We might, perhaps, have marked it a little higher if we had not graded on that feature. The flavor was fair; it was a clean flavor, but the flavor had not been developed in it yet by the curing process. It was a clean flavor. It was a cheese that would do to keep for a good while, and the longer you kept it the better it would grow. It would not have a rank, bad flavor. The texture was very fair. It was fairly flinty in its break, but it had probably been made by the granular method, and did not show as much of that flinty break that buyers like to see.

Mr. Drischel: That is true, Mr. Decker.

Professor Decker: It shows the crude granules.

Mr. Drischel: Yes, sir.

Professor Decker: There was about the right amount of moisture in it, and showed about the right amount of salt, and was very fair in the package, according to your scale of points. I will say this, that the bandage was laid over the cap on top. Buyers like to have the cap over the bandage, so that after it has been in cold storage for awhile; if it molds a little bit it can be removed and a new one put on. The cheese that scored second was fairly clean flavored at this time, but it is altogether too moist, and it is rather porous in its texture. If that cheese would be handled under warm conditions it would go all to pieces. It is a cheese that would not keep long. It is a cheese that is not a long-lived cheese, and for these reasons we had to cut it off on the score of points. If more salt had been used it would have improved it greatly.

The cheese that scored third might have been a better cheese. I think it was a better made cheese than the one that scored second, but on account of the bad milk that it was made from it had a very bad flavor. It wasn't simply a very bad flavor, but it was a very ill-flavored cheese; and it comes from the bad milk, because we were able to detect the gas holes—little pin holes in the curd—that had been in a measure worked out, I presume, but they were still there, and the bad flavor had got in the milk from the wrong fermentation. That scored eighty points, but I think that was a better made cheese than the one that scored second. It was dryer, although it had a little too much moisture in it. It was an older cheese than the other, and better broken down.

Mr. Drischel: I would like to ask you a question. Quality twenty-five. You say it is an English term for cured cheese?

Professor Decker: Yes, sir.

Mr. Drischel: Define that, please.

Professor Decker: Quality, as I have known it in the score cards, has been in the English score cards and some of the Canadian score cards, and they consider the rich condition of the cheese that melts on the tongue. It is really the cured condition of the cheese. It compares the cured cheese with the green cheese. In this country there is a tendency to look for cheese only partially cured, and that is what we had to consider in scoring the cheese this morning.

Mr. Drischel: That is true.

Professor Decker: For my own part, in scoring cheese I would have just three things to consider. I would have flavor, which is the most important; I would have texture, which is the next important thing; and package, which is an important thing. Well, perhaps I would consider color. Color would show when the milk has been too sour, or where the acid has been carried too far. Of course, flavor is the most important thing to consider in a cheese, and flavor and texture both come from the condition of the salt. By the amount of salt used in a cheese we can judge the condition of the cheese. If you use too much salt you will make it mealy. On the other hand, if you do not use enough salt it will be pasty. By the use of a little more salt, you can expel that moisture so it will break down properly.

Mr. Drischel: What effect will the richness of the milk have on this condition of the cheese? This tested 4.6.

Professor Decker: The richness of the milk might give a condition which we might call quality in that case. In making cheese, you take the butter fat out, and it makes it tough, and then there is a tendency to put in more moisture to balance the toughness of the casein. The value of milk for cheese depends on the butter fat, and good, rich milk makes more cheese and better cheese, and it makes it in proportion to the amount of fat that the milk contains. That is, it makes more cheese and it makes a cheese worth more money on the market because of that condition, and consequently we ought to pay for milk according to its fat content.

Mr. Johnson: Mr. Decker, on my cheese, No. 3, on quality it is marked off. It didn't say why.

Professor Decker: Well, it is this English term. It wasn't broken down so that it would melt on the tongue. Possibly we might have marked it a little higher if we had not considered the matter of quality. It would not have been many points higher.

Mr. Johnson: This cheese will be two months old tomorrow.

Professor Decker: Yes, and it has been in a cold place.

Mr. Johnson: Yes, sir.

President: I have been attending the Indiana State Dairy Association for a long time, and I think this is the most profitable lesson in judging we have ever had by far. I think the people who have contributed to this dairy exhibition and have also been here to hear their butter criticised are certainly to be congratulated upon the fact that they have been able to learn why their butter and cheese was graded as it was. We will now have a vocal solo.

Vocal solo by E. C. Warring, of Plainfield.

President: Professor Oscar Erf, of the Illinois University, will discuss the question of "Starters for Cream Ripening." This is a subject that is of interest to the private dairyman as well as commercial creamerymen.

Prof. Oscar Erf: Ladies and Gentlemen—I am glad to have an opportunity to meet the dairy people of Indiana today. I always feel at home when I am among dairymen. Over around Champaign we do not have many dairymen, so when I want to feel at home I have to go up in the northern part of the State. I think the reason I prefer to be with dairymen, not only that it is part of my vocation, but because I think they are really progressive.

Before beginning my paper I would like to say that I am going somewhat into the discussion of bacteriology; somewhat into the details. It might be something like the traveling man that drank tea at a restaurant. After drinking five cups, and asking for the sixth, the waiter came back smiling, and he says, "My friend, you certainly must like tea." "Well," he says, "I do, or I wouldn't drink so much water in order to get a little tea."

STARTERS FOR CREAM RIPENING.

PROFESSOR OSCAR ERF, UNIVERSITY OF ILLINOIS.

The all important question of the day with creamery and dairymen is how to obtain a uniform and finely-flavored butter. Nearly all investigators agree that the secret lies in the proper ripening of the cream; and when we read of the tons of low-grade butter brought into the markets daily, all owing to the fact that negligence or ignorance as to the proper treatment of the cream lies at the root of this great fault, it appears to be a point worthy of consideration.

To state the subject of starters plainly and intelligently, it is necessary to take the fundamental principles of the ripening of cream into consideration. The ripening of cream includes two features upon which the quality of butter largely depends. These are flavor and texture. The effects of ripening with starters are far more marked upon the flavor of butter than upon the texture, for it is during this process that the characteristic flavors are developed. Cream ripening is merely a fermentation process, caused by bacterial growth. This growth is controlled by temperature, in which a rise (from 60 degrees F., and not to exceed 100 degrees F.) induces growth and develops immense numbers of bacteria; while lowering the temperature retards growth. The action of these germs in cream results in the conversion of a part of the milk sugar into lactic acid, and a slight formation of carbonic acid gas and a few other volatile constituents not definitely known.

The production of lactic acid causes the sourness of cream, and is largely accountable for the desired flavor in butter. It is the most important product formed, and serves as a guide in testing the ripeness of cream. The carbonic acid gas is mostly given off, but the volatile constituents play an important part, if the ripening be properly carried on, in producing a fine aroma, which is not obtained when foreign acids are added to sweet cream in the attempt to secure the same flavor without ripening. For this reason sweet cream butter has very little flavor, and it is only through the ripening or souring of cream that the flavor of butter is obtained. The ripening of cream may develop good or bad flavors, depending upon the kinds of bacteria which take part in the fermentation. A particular kind of bacteria, as a rule, gives rise to a fermentation characteristic of that species and consequently the fermentations that give rise to a bad flavor are always due to some undesirable germs that have gained access to the milk. The source of these last named germs in the milk is filth. due to careless and dirty milking or to the use of unclean utensils, or sometimes to the use of milk from a diseased cow. Filthiness is the great source of trouble in the art of butter-making, so much stress must be laid on cleanliness in every phase of milk and butter production.

Besides bad fermentations, there is another cause of poorly-flavored butter. This comes from cream or milk having been exposed to foul odors, which are absorbed and given to the butter. The theory that milk does not absorb odors when warm and cooling has long been abandoned. Experiments show that milk in that condition is even more susceptible to odors than in any other state. In the ripening process this odor can be partly eliminated by aeration or by pasteurization of the cream, but in case of a bad fermentation some antagonistic germ must be added in order to check the progress of the undesirable one.

This antagonistic fermentation is commonly known as a starter, and if properly prepared contains the right kind of flavor-producing bacteria. The preparation of a starter is as follows: Select three or four pint jars of the best milk that comes to the creamery, or, where opportunity affords, select the milk from several good cows; cover these jars and set them away in a warm place until the milk has coagulated. From these select the one that has developed the best sharp, acid taste, free from disagreeable odors and gas bubbles, and that shows a solid curd. A can of skim milk should then be heated to a temperature not exceeding 175 degrees F. for twenty minutes and cooled to 75 or 80 degrees F. The selected jar of milk is then added, and, after thoroughly mixing, the can is set in a place where the temperature can be kept at 75 or 80 degrees F. for twenty-four hours. A wooden tank, large enough to hold seven or eight times the amount of water occupied by the starter can, answers the purpose well for keeping this starter at a uniform temperature for a long time. The entire amount of the starter should be sour at the end of this period and apparently of the same flavor as that of the original selected jar. The starter is now ready for use, and an amount equal to seven or eight per cent. of the cream to be ripened is added. By adding one or two quarts daily to fresh pasteurized milk it can be perpetuated to the extent of eight to ten days, depending on the cleanliness and the care taken in pasteurizing the skim milk.

This method of preparing a starter invariably brings good results. Quite often, however, simpler methods are proposed for preparing starters, such as leaving some cream in the vat and running the fresh cream with it, or by adding buttermilk to the cream; but these can not be recommended, for they too often fail in producing the desired flavor. The introduction of pure cultures of bacteria, or the so-called commercial starters, selected with special reference to their favorable flavor-producing qualities, have been in use for a number of years, and are the results of the researches of Professor Storch, of Denmark.

In that country and in Germany several different ferments have been placed upon the market, and their use of late years has so rapidly extended that at present nearly all of the export butter from Denmark is made from cream that is first pasteurized and then ripened with the aid of a pure culture starter.

During the past five years American cultures have been placed on the market. They have also been used quite extensively in many of the dairy sections of this country, although they have not been so universally adopted as in Denmark.

Our experience for the past few years with these commercial starters has been such that we can scarcely do without them now. We prefer them, not for the reason that we can produce a more desirable flavor than with a home-made starter, but because we think by persistent effort we can induce butter-makers to use them and thereby produce a more uniform flavor, which, after all, seems to be a greater objection with the average American butter than the lack of flavor. This may be a slow process, but in time it will reach out and naturally affect the majority of creameries. This tendency is very appreciable in dairy communities where these starters have been introduced.

A starter must not only be considered as a means for improving the flavor of tainted cream, but ought to be adopted universally as a means for ripening all cream. A good starter lays the foundation for fine and uniformly-flavored butter, and without it a fine flavor can not be obtained in pasteurized butter. The reputation of the Danish people for making uniform butter, that has gained preference in the English and other foreign markets, is largely, if not entirely, due to the use of starters in its manufacture.

In ripening cream, care must be taken to reach the right degree of acidity. This can be determined with Mann's acid test or with the Farrington alkaline tablets. If the ripening is carried on too far the bacteria are apt to attack the albumen or the fat of the cream, forming a new product which will give butter a disagreeable flavor. The overripening of cream affects to a large extent the keeping quality of butter. An experiment will probably best illustrate this point. Samples of butter were analyzed. In the first sample the butter churned from overripe cream contained 1.16 per cent. casein, while in the second sample butter churned from mildly ripened cream contained only 0.8 per cent. As the keeping quality of butter is decreased when its proportion of casein is increased, it will readily be seen that under equal conditions the overripe sample would become "off-flavored" more rapidly than the other.

To produce a uniform flavor in butter, the degree of acidity must be considered in relation to the thickness of the cream. In the making of a high-flavored butter, the cream must be thin rather than thick, in order to furnish more milk serum for the development of more acid. Thick cream should not be ripened to so high a degree of acidity as thin cream, for the reason that the flavor of the butter is endangered on account of the lack of food supply for germ growth for the production of more acid. The following standard we have adopted: For cream containing 20 per cent. of butter-fat, ripening should proceed until about 0.6 per cent of acid develops, as determined by means of Farrington's tablets; and for every 10 per cent. increase of fat in cream there should be a decrease of one-tenth of 1 per cent. of acid, as the proper stage for checking the fermentation.

In the ripening of cream we prefer to separate cream very rich, about 30 to 35 per cent., and thin, down to 25 per cent., with a clean-flavored starter. Theoretically we assume that the more of the tainted skim milk we can get out of the cream and replace it with a starter, the better results we will have. This plan bears out well in practice.

A certain temperature for ripening cream seems to have little effect on the flavor, provided the cream is ripened above 60 degrees and below 90 degrees F. The ripening is, however, much hastened by high temperature. A satisfactory temperature is from 65 degrees to 70 degrees for summer, and from 70 degrees to 80 degrees for winter. The cream should be stirred occasionally during the ripening process. This is essential for several reasons. It aerates the cream, insures evenness in ripening, prevents the surface from drying—which is one of the causes of mottled butter—and furnishes free oxygen to aerobic germs, which seem to play a part in the ripening process.

In conclusion, I would like to add that our butter judges have heretofore laid too much stress on high flavors in fresh butter. As I have stated, production of high flavor is merely a step toward rancidity, and thereby butter invariably loses its keeping quality. It is my opinion that a good keeping quality in butter is equally as important as flavor, if not more so, and we ought to sacrifice this quick flavor in a fresh product for low, clean flavor and good keeping quality.

I can not help but advocate that cream should be churned with less acidity, especially when butter is being manufactured for cold storage. Butter in a good cold storage will naturally acquire a higher flavor in time. I believe we ought to do all we can to discourage this "high flavor" craze which is so prevalent among butter-makers, and induce them to pay more attention to the keeping quality, which at present seems to be the greatest trouble with the average laymen that consume strictly dairy products.

President: We have a few minutes for discussion of this subject, and it certainly is an important one. Are there any questions to be asked Professor Erf or Professor Decker?

Secretary: Now is the farm butter-makers' chance.

Mrs. Shaw: I would like to ask if, in preparing the starter, a tin vessel should be used or if a stone one is the best?

Professor Erf: Tin is just as good as stone, but less expensive; there is really no difference. A tin utensil can be sterilized, while a stone utensil can not. That is the only objection to a stone vessel. In other ways, it is just as good.

President: Would you discriminate in tin?

Professor Erf: I should always prefer a good heavy tin. They call it 5X—4X and 5X. It is made of sheet iron covered with tin. Some of this thin tin is made of a preparation between sheet iron and galvanized iron. It is a very cheap grade of tin and very thin. The reason they use that for tin is because they can roll it out better and make it thinner. I should always prefer to have heavy tin, and have it heavily tinned—sheet iron with a heavy coat of tin. Of course, copper with tin is best of all, but it is generally quite expensive, and a person can not afford to buy very much of this copper-tin. Therefore, I say I would rather have heavy sheet tin.

Professor Decker: If the tin wears off and exposes the iron, it would give an iron flavor, would it not?

Professor Erf: Yes, it does that. That is the reason you want to have your iron heavily tinned to prevent this wearing off. I don't like to see tinware around a creamery that has lost patches of the tin. It invariably results in a bad flavor in the milk. The milk absorbs the peculiar rusty flavor, which can be detected; so that the point is to get a heavily tinned utensil.

Professor Decker: You say tinware around the creamery. That includes the cans?

Professor Erf: Yes, and around the dairy. I may add around the cheese factory, also.

Mr. Johnson: In preparing your starters, when they ripen up with small pin holes, is it good to use these?

Professor Decker: For cheese?

Mr. Johnson: No, for butter.

Professor Erf: I don't like to have them for butter.

Professor Decker: We had some here this morning that had a flavor that was somewhat gassy; the flavor wasn't clean. I think it was principally due to a gassy fermentation.

Mr. Johnson: It must have been my score. Mine was forty-five.

Professor Erf: We don't mean to say you are not clean. It is a bad fermentation in the cream.

Mr. Newsom: I would like to know if you would recommend commercial starters for use in farm dairies?

Professor Erf: I think it is just as important to use in the farm dairy as in the creamery. The idea is to get a uniform product. The Danish people do not make a better product than we do, but it is more uniform. Go to Indianapolis and look at the butter. You have all grades. The point is to get this uniform. Get it uniform in color and uniform in flavor; that is the reason I recommend these commercial starters. I don't mean to say you can get a better flavor, but if we all use one kind of a starter we would be more apt to have a uniform product.

Professor Decker: May I say a word right here about uniformity? It was my privilege four years ago to visit Denmark and the English markets and study the question of cheese and butter in the English market, and I found, as Professor Plumb has said, that the Danish butter is the butter that leads in the English market. The Englishman is a conservative man, and when he gets started in on certain articles he is opposed to change to something else, and when he buys Danish butter he knows he is buying something of standard quality. The Danish butter he buys today is like the Danish butter a week ago, and the same as Danish butter will be in three weeks from now. It is uniform, and that is what we ought to aim at. As Professor Erf has said, you go down to the store and you will be able to get most anything in butter. It may be good and it may be bad. It is not uniform. Danish butter is uniform, and consequently four years ago, of the $65,000,000 worth of butter used by the English people, $33,000,000 worth was made by the Danes. I will say that we have a surplus of butter in this country, and, expecting to ship it abroad, if we would expect to get the best price we will have to make uniform butter, so that when they get it it will be like the last butter; so they can depend on it. Make a standard article, and if we do, we have to study these problems and study the matter of flavor. I will say further than this, that the most of the Danish creameries pasteurize their milk. To prevent the spread of tuberculosis, a law was passed compelling all Danish creameries to pasteurize their product, and as they use a commercial starter to produce a flavor, it is always the same kind of flavor. There are a number of concerns in Copenhagen that are producing commercial starters.

Professor Erf: I would like to say that two days ago I was up in Elgin, supposed to be the greatest butter-producing community in Illinois, and I am sorry to say that the oleomargarine butter trade has increased 50 per cent. I inquired why this was. "Well," they say, "I buy some butter and it is good, and I go back to the store and want some of the same butter, but it is different. It is either rank or it is a different color. Well, if I go down to the store and buy butterine, I always get the same thing." That illustrates the necessity of uniformity. Simply because butter is not uniform, these people are consuming more butterine today.

Professor Decker: Butterine hasn't much flavor, and it is always alike in that way.

Professor Erf: Yes, sir.

Mr. Knox: There is one question I would like to ask. Would you recommend the use of soap in the dairy or creamery for cleaning utensils?

Professor Decker: Salsoda is a much better thing to use.

Mr. Drischel: We use salsoda entirely. How is Fairbanks' Gold Dust?

Professor Erf: Fairbanks' Gold Dust is good for scrubbing the utensils with.

Mr. Drischel: How about Klondike Powder?

Professor Erf: Klondike Powder is the same as Gold Dust, with a different name.

Mr. Knox: I buy a preparation from the Creamery Package Company. It is called ——.

Professor Decker: That is a phosphate, I think.

Mr. Knox: That is a preparation for cleaning and purifying tinware.

Professor Decker: That is phosphate.

Mr. Knox: I don't remember just the name.

Mr. Shugart: I would suggest that the Committee on Nomination of Officers meet after the adjournment.

President: The Committee on Nominations will meet after the adjournment, and I think it would be a good idea for the Committee on Resolutions to meet. Nothing has been said yet about a Committee on Legislation further than what I mentioned this morning.

Mr. Newsom: I move that the Chairman be authorized to appoint a committee of three as a Legislative Committee.

Motion seconded and carried.

President: I will name the committee later.

Adjourned until 7:30 p. m.

EVENING SESSION.

December 18, 1901, 7:30 p. m.

Piano duet.

The President: The first thing on the program this evening will be "The Germ Theory of Disease," by Professor Dennis, of Earlham College.

THE GERM THEORY OF DISEASE.

PROFESSOR D. W. DENNIS, EARLHAM COLLEGE.

Less than half a century ago we were wholly ignorant of the cause of most diseases; we did not know the cause of the fermentation of milk or cider or anything else. We did not know what produces decay. On the day Liebig took his doctor's degree at Erlangen, Pasteur was born. Between these men was destined to occur the first great battle of a series that is certain soon to gain for man the victory over pestilence. Liebig could show that alcohol was sugar oxidized; that acetic acid—vinegar — was alcohol oxidized; the oxidation was without noticeable waste, and he concluded that the oxygen of the air caused the change. Pasteur noticed what many of us have often noticed—that cider or wine will sometimes quickly turn to vinegar; at other times it will not. I can remember when my father and every other farmer had his

"Sixteen barrels of cider
Ripening all in a row."

Sometimes we wanted to keep some of it to drink, but could not; boiling would delay the souring somewhat, but it would not prevent it. At other times, having no vinegar, we wanted the cider to sour, but it would not. We put tea grounds in it; tried all the recipes of all the old ladies of both sexes in the entire community, but it would not sour. Pasteur believed that there was some unknown reason for this. He was made president of a college in France, located in a rural community, in which the chief industry was the grape culture. The farmers had more wine and less vinegar than they could sell. Pasteur believed that useful knowledge had educational value as well as theoretical and ornamental knowledge. He further believed that a college ought to help the community in which it was situated. He accordingly turned his back on physics, in which he had already made brilliant discoveries, and addressed himself to the problem: "How can I help this community—turn its wine, for which it has no market, into vinegar, for which it has a market?" He put wine that was turning into vinegar from all procurable sources under the microscope and found that it always contained a certain micro-organism; he put wine that refused to sour under and never found it. He raised a pure culture of this organism—mycoderma aceti—by sowing it in sterilized wine and found that a little of this culture added to wine that would not sour always gave vinegar. The announcement that wine in any quantity could be turned into vinegar in ten days did not hurt the school that made it, nor did it discourage the boys to know that the community consulted their master.

The wine was also subject to diseases. Sometimes it would become viscid, and sometimes sour, and was worthless in either case. Pasteur discovered the micro-organisms that caused these diseases, and found a remedy for them. The germs that caused them could be killed in the bottled wine by heating it for a little while up to 150 degrees F., after which it could be shipped round the earth and not spoil.

Pasteur next rendered a similar service to the beer industry. He ascertained the causes of its deterioration and what ferments would add to its value. He set for himself the task of making above ground, and in a short time as good a quality of beer as could be made in Germany at great expense in cellars. It is easier to prove that he did this by a Frenchman than by a German.

These investigations into fermentation put us in possession of the inestimable fact that each fermentation is caused by its own kind or kinds of micro-organisms. These different germs living in the same medium consume its constituents in different proportions. They leave in it as the result of their life-processes different substances. Some of these are well-flavored and some are not; some are poisons and cause disease; others are foods that we need. The dairy, as we have it today, depends on this fact. Bad butter means that the wrong germs have found their way into it or the cream from which it was made. The different flavors of samples of butter depend on the kinds of bacteria that produce them.

FORMS, HABITAT, ETC., OF BACTERIA.

Figure I, taken from the scrapings of teeth that had been strangers for some days to the tooth brush, shows the different forms which the bacteria assume. Sometimes they are long rods (1); sometimes they are short rods (4); again, they are bent rods (3); still others are little spheres (5), and others yet are long spiral lines (2).

They are to be found in surface water in all inhabited places. Deep well water never has them, and spring water generally does not.

They vary in number in water from few or none up to many millions per cubic inch.

They are present in the air generally, but not everywhere. On high mountains there are none. In a well-regulated hospital, several thousands are to be found in every cubic yard of air. They are fewer in open parks of cities, and fewer still in the country.

There are none in milk, if it is drawn with every scientific precaution; this is, however, never done in practice. If milk is drawn in a dusty, carelessly kept stable, in a wide-mouthed bucket, they are always very numerous in it. Milk on the market in Halle has been found to contain 750,000,000 to the cubic inch.

They are numerous in the soil wherever there is loam; pure clay or sand is without them. They are not found deep in the ground under normal conditions.

SIZE OF BACTERIA.

It follows from the figures given above that bacteria are very small; the smallest are less than one two-hundred-and-fifty-thousandth of an inch. The bacillus tuberculosis (Fig. II) is so small that 125,000 can lie side by side in the space of an inch.

Their rapid multiplication under favorable conditions enables them to do the great harm or good which they do. Bacteria multiply by simple fission; they divide so rapidly that one can become the ancestor of

16,000,000 in one day and 281,000,000,000 in two days. Fig. III shows various stages of division. On the whole, they help us more than they harm us. It will appear, from what is said above, that if all bacteria were disease germs none of us would escape. They are our ultimate scavengers. One sort lives in the tubercles on the roots of clover and enables the plant to gather nitrogen from the air, which, in the death of the plant, rejuvenates the soil. The story of how they help us is even a longer one than how they harm us. The past twenty-five years have taught us how to reach out to the impalpable dust of the atmosphere to recognize in it our friends and our foes, to harness one and restrain the other, in many cases, with the same ease and certainty as in the case of the ox and tiger.

DISEASES OF SILKWORMS.

It is always a pleasure to be able to say "The hour found its man." In the matter of the disease that prostrated the silkworm industry of Southern France it is not, however, true. The disease came in 1849. It was nearly twenty years before Pasteur completed the conquest. When neighbors meet there they do not say, "How are you," as we do, but "How are your silkworms?" This means that the silkworms are the life of the community. Pasteur's old teacher, who was "Reporter of the Commission;" knowing what he had done for the diseases of wine and beer, asked him to go to Alais and see what he could do for the trouble. The story is long, and, as the story of triumph always is, it is interesting. Only the barest outlines can be given. On the day of his arrival the germs were found. Three weeks later a remedy was proposed. When a silkworm moth has laid her eggs her duty to the species and the industry is performed. Her subsequent pleasures are personal merely. Pasteur prescribed: when a moth had laid her eggs grind her to powder in a mortar with a little water, and if these disease "corpuscles" are found, burn the eggs; if not, save them. Five years of subsequent labor and experiment were necessary to answer all questions and differentiate between two fatal diseases and complete the cure. That his cure was real was shown by his being offered the culture of the Imperial villa near Trieste, which had not paid the cost of carrying it on for ten years. Pasteur had been paralyzed on one side by his great labors, but he had his friends carry him in a rocking chair across France and over the Alps to Vicentina. The silkworms knew their master, and spun for him that one year 26,000,000 francs worth of silk over and above the cost of their care. From that hour to this, fame and fortune have known no other name like that of Pasteur.

He had now discovered the causes of diseases in wine, beer and silkworms, and had in every case prescribed a remedy. Could he not find out the causes of diseases among animals and men? On his way home he resolved to try.

CHICKEN CHOLERA.

The chickens were dying of cholera. He discovered the germs of the disease in their blood. Could he cure it? One thing known to all of us had a suggestion in it for him. When a disease like measles breaks out in a community the first to have it have it severely; those who contract it from them less severely, until finally the disease runs out all together. Could he not attenuate the virus of chicken cholera? He made a pure culture, exposed it to light and air and from time to time inoculated chickens with it; he found that they had the disease less and less severely until finally all of them recovered, and were found by inoculation to be proof against the virulent form of the disease. Cause and cure had again been found.

A strange scourge fell upon Pharaoh's cattle. It fell as well upon all the cattle of all the Pharaohs from the time of Moses to the time of Pasteur. This was the next disease Pasteur studied. The bacillus anthracis that causes this disease is one of the largest of the bacilli. Sheep and goats have the disease as well as cattle. There are three ways by which contagious diseases are contracted—through the air we breath, through our food and drink, and by the introduction of the germs into the blood through the skin. Anthrax attacks men sometimes. It is called in England Woolsorter's disease. The men who sort the wool get their fingers pricked with the burs and the bacilli get into the blood this way.

Pasteur found the bacilli in the blood of an ox and made a pure culture. He tried keeping it and inoculating a sheep every day; but instead of losing he found that it gained in virulence; the sheep became sicker and died quicker. Pasteur did not know why. We now know that under these circumstances the bacilli form spores; these are more virulent than the bacillus itself. The obstacle is the spur to genius. Pasteur inoculated several different kinds of animals. In this way he found out that chickens are immune. Inoculate an ox that weighs 2,000 pounds, and it sickens and dies; a chick of a few ounces, and it does not take the disease. Why? Pasteur concluded that it might be because a hen is hotter than an ox. He inoculated a hen and put her on ice and cooled her down to the temperature of an ox, and she took the fever and died. He took another and gave her anthrax in the same way, and when her pulse rose and her mind began to wander he put her in an incubator and heated her up to the temperature of a hen, and she soon took on a benevolent expression, got up, shook out her wings and would have crowed if she had been the other sex.

He now tried his pure cultures again, heated in an oven at 43 degrees centigrade, and from day to day they lost their virulence, until at last the sheep recovered and were immune against the virulent form of the disease.

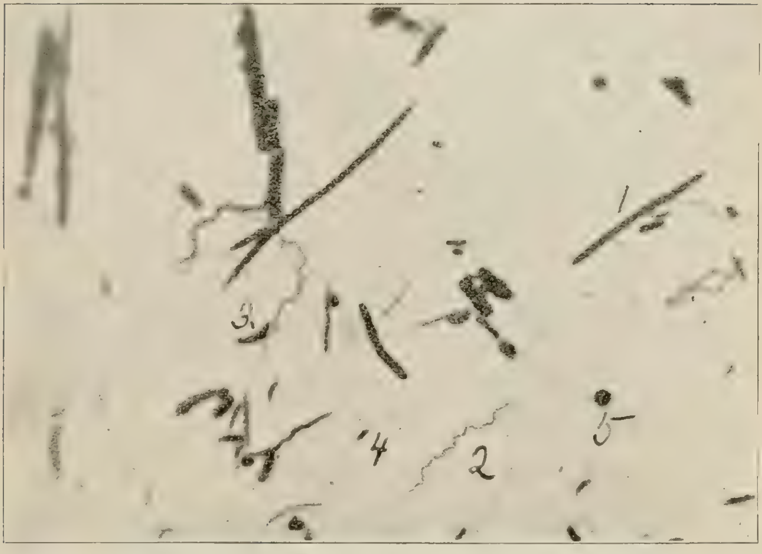

Fig. I. Tooth Scrapings × 2000.
["× 2000" means magnified 2000 times under the microscope —Editor.]

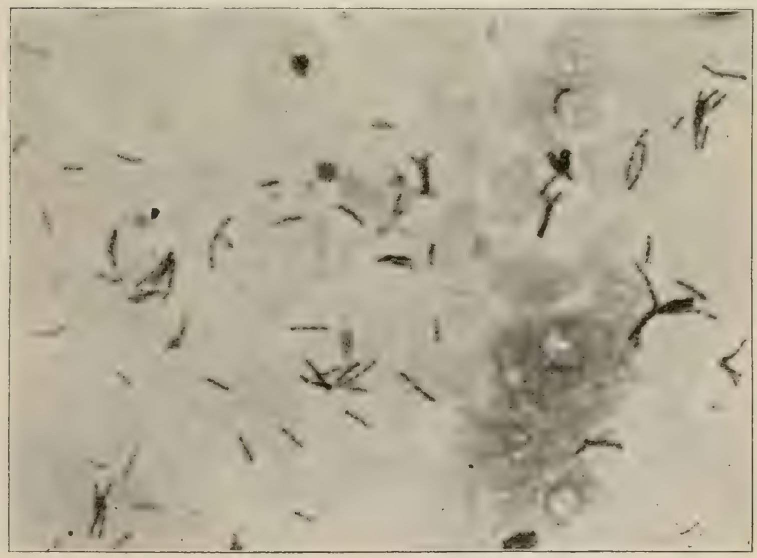

Fig. II. Bacillus Tuberculosis × 2000 from Sputum.

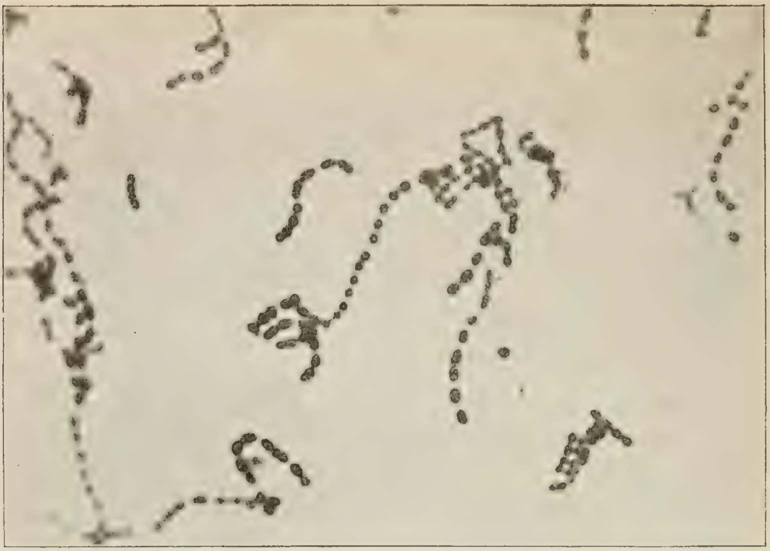

Fig. III. Streptococcus. A pus-forming germ × 2000.

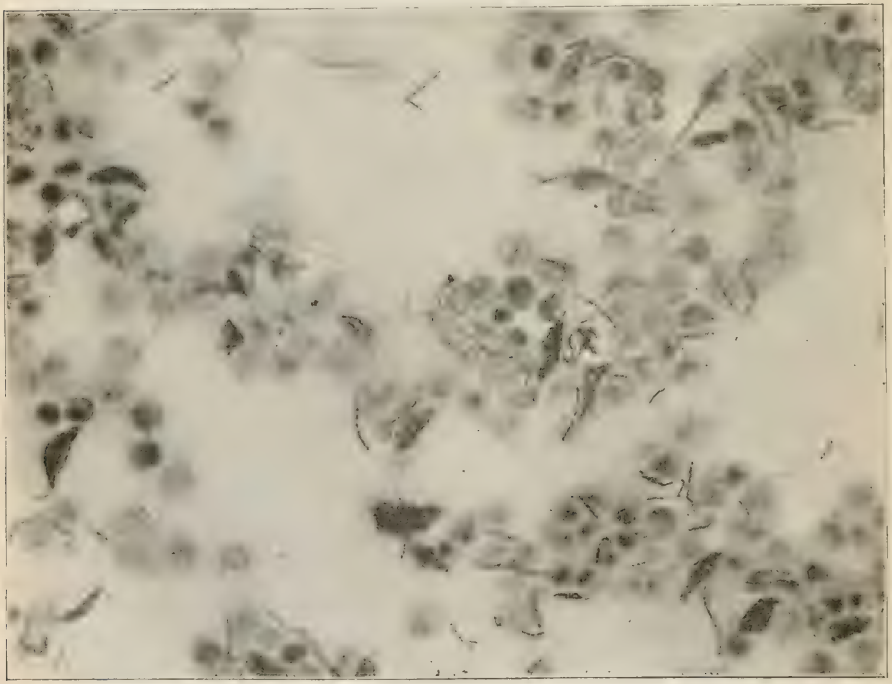

Fig. IV. Anthrax Bacilli, that are being devoured by the white blood corpuscles of a frog. The frog is probably immune for this reason. × 400.

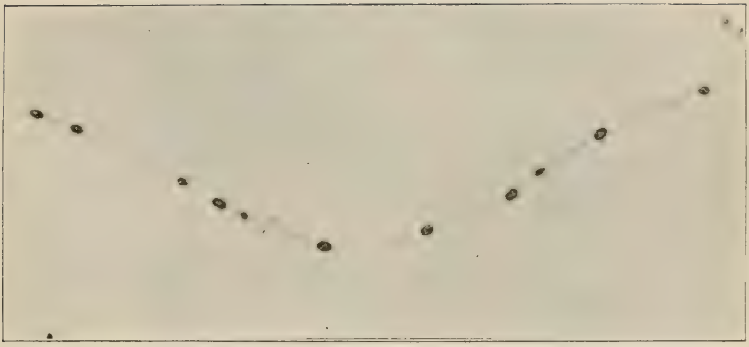

Fig. V. Spores of Bacillus Anthracis. × 1500.

When the food of this bacillus begins to fail it forms spores which are surrounded by walls thicker than the germ itself was; these enable it to survive seasons of heat or cold or drouth that would be fatal to the germ itself. The formation of these spores caused the first virus Pasteur tried to prepare to become more instead of less virulent. The presence of spores with thick walls sometimes prevents boiling from sterilizing a liquid.

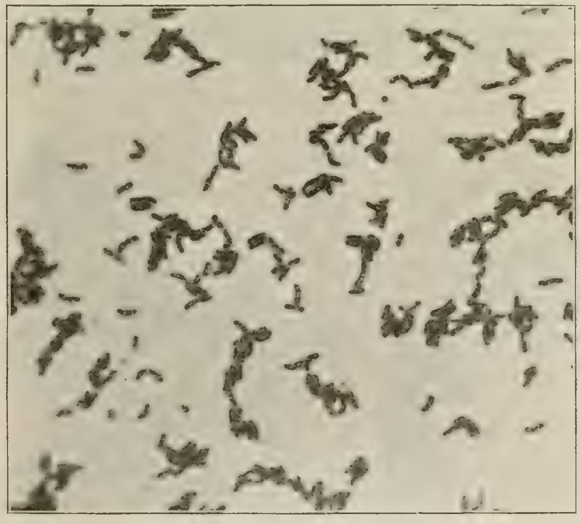

Fig. VI. Hog Cholera. × 1500.

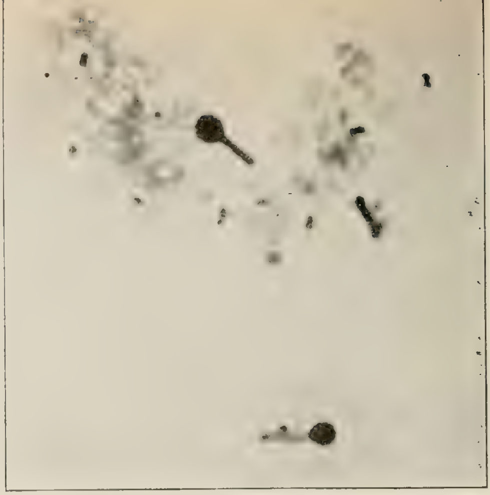

Fig. VII. Spore formation in the bacillus that causes lockjaw. × 3000.

Fig. VIII. Bacillus of Typhoid Fever. × 2000.

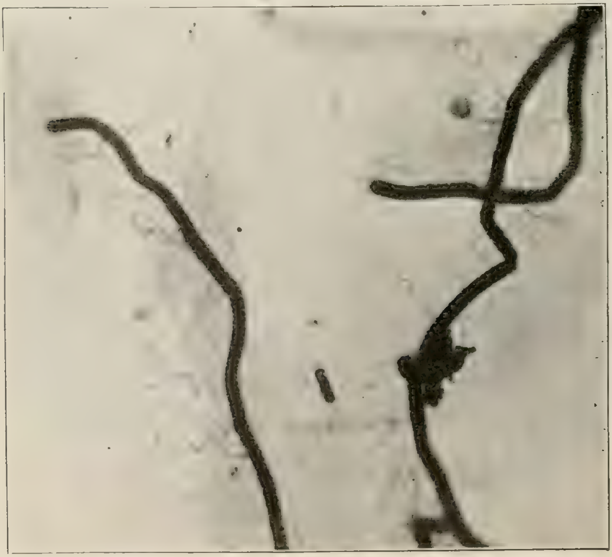

Fig. IX. Bacillus of Malignant Œdema. × 2000,

ANTHRAX.

As these experiments were going on his daughter said one day: "Father wears the look of an approaching discovery."

When the details of these experiments were rehearsed in the French Academy, they were met by every form of incredulity. It was allowed to be "romance," "too good to be true," etc.; but a farmer, whose stock was dying, asked for a public experiment on his farm. Pasteur went to his farm, selected ten oxen, forty-eight sheep and two goats. Of these, one-half--five oxen, twenty-four sheep and one goat—were selected for treatment. These were vaccinated with a weak virus, and when they had fully recovered they were again vaccinated with a virus somewhat stronger. When they had again recovered, the public experiment took place in the presence of many newspaper reporters, scientific men and stock breeders.

All the selected cattle, sheep and goats were inoculated with virulent anthrax. This was done with the same syringe and in alternation; that is, first one that Pasteur had treated and then one that he had not. Pasteur invited the guests to return after forty-eight hours, predicting that the goat and sheep not treated would be dead, and that the cattle not treated would be swollen at the joints and sick with the fever; that all previously vaccinated by him, however—the goat, the five cattle and the twenty-four sheep--would be standing in their stalls, eating hay. When they met again, in two days, such a shout of victory went up as never by right had rent the air of France. Twenty-three of the twenty-four sheep not treated were dead and the other died in a couple of hours; the goat was dead, and all the cattle were sick. Every head of the vaccinated stock was well and eating hay. This meant the victory over pestilence.

The discovery of the cause and cure of this disease did not satisfy Pasteur; there was much mystery about it still. Upland cattle rarely had the disease; lowland cattle rarely escaped it. Pasteur visited the lowlands to ascertain, if possible, the conditions there and the life history of the anthrax bacillus. It was the habit of the farmers to drag the bleeding cattle that had died over the grass to some suitable place for burial. Stock that ate this blood-stained grass caught the disease. Worms devoured the dead bodies of the cattle, and, coming up to the surface, left the deadly germs in their castings on the grass. This is not guess work. Pasteur found germs in the bodies of the worms, and reared others from their castings. There were no worms in the uplands. The conditions furnished a complete explanation. Fig. IV.

HOG CHOLERA.

Our hogs get the cholera germs generally from the water they drink. The disease as a scourge can be prevented by giving the hogs deep well water or spring water or boiled water. West River and Nettle Creek are two small streams in northern Wayne County, some two miles apart. Among the hills that form the water shed between them are many springs.

Hogs drinking from these springs have never had the disease, while all farmers living along the streams in both directions have again and again lost most of their hogs. Animals dying of the disease should at once be burned *on the spot where they die.* Thousands of them have been buried after being dragged bleeding over the ground for considerable distances. From the buried carcasses the germs get into the streams and go wherever they go. This is the general way for the dissemination of disease germs. There are, of course, accidental cases. A railroad carrying diseased hogs scatters the disease; a dog may carry the germs on his feet, or the farmer himself may. But these accidental cases do little harm compared with the wholesale spreading of the disease by contaminated brooks and streams. Fig. VI.

CREMATION.

If we had been wise we would, after Pasteur's experiments on anthrax, have decreed the cremation of the dead, though embalming is nearly as safe as cremation. But many undertakers can not properly embalm a body, and, besides, it is everywhere the custom to consult the friends of the dead as to their wishes in the matter; that is, we permit people, who do not know what they do, to keep alive germs of disease that may cause the sickness and death of generations not yet born. Forty years after a pestilence of scarlet fever in an English town the minister plowed the cemetery for a garden, and the scourge which every one but the lonesome mothers had forgotten, fell upon the same town with more than its first destructiveness. Poetry for some thousands of years has given to the grave its drapery of words—the most sacred, consoling and tender that art can suggest: The "moldering earth," "the clods of the valley," "the narrow house." To "go back again to Mother Earth" appears to be the natural thing, and "unto dust thou shalt return" seems a divine decree. Cremation is, nevertheless, rapidly gaining. It leaves us at once with a memory and a spirit, and this is best, and one day it will seem to be best. Expression can and will do for the final "purification by fire" all it has for the grave. But all this is sentiment. The struggle with disease is real; cremation will help us; this should be enough.

HYDROPHOBIA.

Pasteur now undertook the conquest of hydrophobia. Its cause was unknown. It was certain death, attended by the most awful circumstances conceivable. Genius seeks such a task. Pasteur thought that the notion that hydrophobia was a disease of the salivary glands was a mistake, for the reason that madness is always a symptom, and this, he said, must involve the brain. His first step was to transfer a portion of the brain of a mad dog to the brain of one that was not mad. This soon produced madness, and his first point was gained. He now inoculated a number of rabbits with diseased brain matter, and, when they were thoroughly mad, he took out their spinal cords and subjected them to the influence of light and air, and from day to day inoculated other rabbits with these. The disease, as before, lost in virulence, and at last the rabbits recovered and were found to be immune. His process was further tested by permitting a number of dogs to be bitten by a mad dog, of which number half had been treated by Pasteur and half had not. Every dog not treated went mad and not one that had been treated took the disease. He now began treating people who had been bitten by mad dogs. The first year he treated 2,682 cases, 98.66 per cent. of whom recovered. The second year 1,770 cases, 99.37 per cent. of whom recovered. The third year 1,622 cases, 99.45 per cent. of whom recovered.

He went to his grave in 1895, with all the honors his country could confer.

SURGERY.

When Pasteur had finished his demonstration that fermentation is caused by bacteria, Lister concluded that the same might also be true of decay; that wounds ought not to suppurate; that there is no *laudable* pus. He had doubtless learned, as every boy does from his mother, the value of healing by the "first intention." She squeezes the cut, the outward flow of blood carries the bacteria away; she then binds the edges together, without washing, with court plaster, and the wound heals without formation of pus in a few days. This is her way of keeping the bacteria out. Lister introduced antiseptic treatment and bandages for all wounds; and the results were so beneficient, so astonishing, so undeniable that the news went at once everywhere. The late Dr. Weist, a few years ago, removed a pint of stones from the bladder of a man seventy-five years old, who, eight days afterward, came on horseback to see the doctor. He removed a tumor that weighed more than the little woman from whom it was taken, and she recovered; he always called it cutting her loose from the tumor.

VIVISECTION.

We might as well quit scolding about vivisection, unless it amuses us more than any other form of diversion. The stakes are so big that no attention whatever will be paid to our talk. We wanted to know whether the body cavity could be safely opened and operated upon or not. We had to practice on men or animals. Which would have been best? We did open the pleuroperitoneal cavity of dogs and perform various experiments, as, for instance, cutting out a piece of the intestine. We brought the two cut ends together and fastened them antiseptically. In a few days the dogs were well, and so glad they had recovered that they freely forgave all who had taken part in the operation; and for a reward we have the lives of our neighbors. Five hundred susceptible animals had to die the painful death of consumption before Koch could tell us the cause of the disease. This knowledge came to us in 1881, and with it a means for the early diagnosis of the disease. This has enabled us to detect and ward it off in thousands of cases in its early stages, and it will at last give us the victory over it altogether. See Fig. II.

ASIATIC CHOLERA.

Our incredulity in the matter of disease and its treatment is amazing. Disease is an entity; only those people who *think* they are sick can be cured by *thinking* they are well. In 1892 a scourge of cholera fell upon the city of Hamburg, more severe than had ever fallen upon any other city. Again and again this disease has set out from its home in Asia, and has traveled across Europe and across the Atlantic to be arrested by the 9,000-mile water barrier of the Pacific only. This time it not only did not cross the Atlantic, but it did not spread in Germany; it did not even cross the street separating Hamburg from Altona. The disease germs got in the Elbe, above the city water works, and appeared almost simultaneously with the contaminated water in nearly every house. Altona had a different water supply. A bacteriologist was placed in command. Rules for battling with the disease were posted on every corner and given to every house and were promptly enforced. Not a nurse or physician in any hospital died from the disease. Demonstration can not be clearer.

TYPHOID FEVER.

Typhoid fever is a disease that we contract in a similar manner; that is, by drinking impure water or milk, or, in rare instances, by eating contaminated food. It is an easily preventable disease, and yet we have it in almost all parts of the State. Every shallow well in a town is a menace to the public health. This menace becomes greater as the town increases in size; and it adds to the danger if the town is underlaid by a bed of gravel from which the wells draw and into which the sinks drain. In such a town one case of disease, improperly managed, may create an epidemic. More than a hundred cases appeared suddenly lately in an Indiana town. A dairyman with typhoid fever in his family brought it with his milk; the first thirteen cases were his customers. From some of these cases the germs reached the gravel substratum, and the fever broke out everywhere. Not only physicians, but every one should know that the deadly germs are in the faeces of the patient, and that these must be passed into a vessel containing a poison like corrosive sublimate or formalin. It will not do to pour the poison in on the stools; some germs are sure to escape. For greater safety, the vessel contents should be burned.

Another Indiana town had its cemetery on top of the hill, its schoolhouse about half way down; the town itself was at the foot of the hill and the river beyond. They had the typhoid fever, of course. Any one of three things would reduce the disease in the State or any part of the State to those bringing it in from somewhere else. Fig. VIII.

1. Deep well water for drinking purposes; say, 250 feet deep.
2. Rainwater for drinking purposes; a one-hundred-barrel cistern, with a thirty-barrel cistern close by, with a filter between; the water to be first conducted into the thirty-barrel cistern.
3. Boiled and cooled water for drinking purposes. Drinking purposes must include the washing and rinsing of all eating and drinking vessels and utensils.

There is an Indiana town with a fine flow of fresh artesian water; but they do not condemn and fill up the wells of the town. The water of these wells has large amounts of salts in it, which give it an agreeable taste. These salts come from the surface drainage of stables, sinks, etc. People like the water and will drink it and take the risks as long as they may. Health in this respect would be so much cheaper than disease, not to count the trouble and pain of disease, that it is strange we do not have it. Munich is a great city that does not have typhoid fever—has to make an excursion with its students of medicine to some other town for a study of its symptoms. We can have it so here whenever we will.

I have shown above that practice on animals is absolutely necessary for the conquest of disease. It is not always adequate. Practice on men becomes necessary. Every little while we hear of heroic souls who put their lives in jeopardy for this purpose. Why should we not give this option to criminals awaiting capital punishment? Suppose we have found a remedy for some deadly disease when some animal has it; we can never know that it will cure men until we try it. Shall we try it on your sick child? This is what we have hitherto been obliged to do. We have perhaps not yet learned all from the Greeks that we can. When Leonidas and his men were about to perish at Thermopylae, two of the Spartans were sick. One of them commanded his servants to carry him to the front where he could die in accordance with his country's decrees, although he had not strength to lift a spear. The other, Aristidemus, did not do this, and unfortunately for him he recovered. He asked of the Greeks the post of greatest danger in the assault against Mardonius at Plataea, in order that he might lay down his life, no longer useful to himself or his fellows, in his country's service. His life had been a failure; he did not want his death to be. The tubercle or the typhoid bacillus is a foe more deadly to the people of Indiana than the Persian was to the Greek. If a life can be found that we are going to waste, that has the heroism of Aristidemus, ought not we to have the courage of the Greek and let him have the place at the apex of the flying wedge against disease? And should he return victor from such a charge we could and we would award to him the punishment Socrates chose for himself—maintenance at the Prytaneum.

President: Professor Decker will talk to us about cheese—varieties, subearth ducts, curing rooms, etc., illustrating his talk with lantern pictures.

CHEESE PROBLEMS IN THE DAIRY.

PROFESSOR JOHN W. DECKER.

Cheese is a concentrated article of human food. It consists of 35 per cent. fat, 36 per cent. water, 23.5 per cent. casein, 3 per cent. ash and 2.5

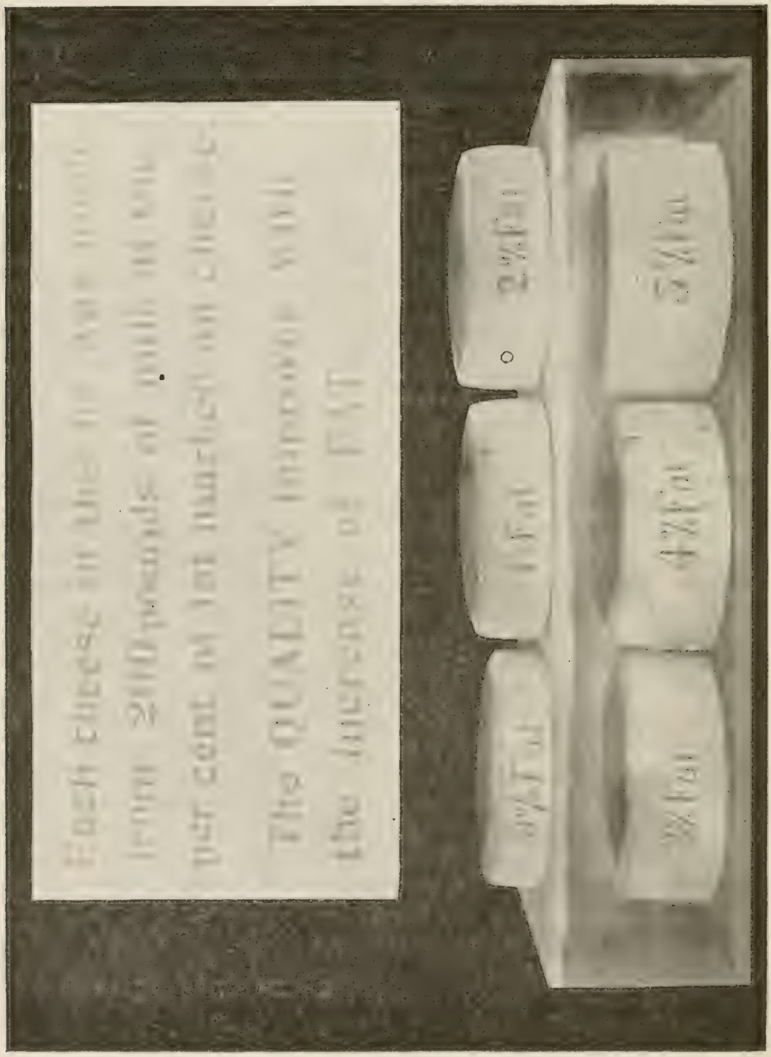
Each cheese in this lot was made
from 200 pounds of milk of the
per cent of fat marked on cheese.
The QUALITY improves with
the increase of FAT
3% Fat
2% Fat
4% Fat
5% Fat

Fig. X.

per cent. of sugar, lactic acid compounds, etc. In the process of curing, the casin is broken down into soluble peptones that can be taken up very readily by the blood. The curing is really a digesting process.

Butter-fat helps to make more and better cheese from a given quantity of milk (it is a mistake to skim the milk for cheese-making), as is shown in Fig. X. It is unfortunate that these pictures can not also show the difference in quality of the cheese, for this is even more marked than the difference in yield.

Milk should be paid for at the factory on the basis of its butter-fat test. The cheese shown in Fig. X, made from separator skim milk, yielded at the rate of 5.5 pounds of cheese for 100 pounds of milk, and if some fisherman could have been found who wanted a big lot of bait that the fish could not get away with, would have brought one or two cents a pound. The cheese made from whole milk would weigh ten pounds, and bring at the same time 10 cents a pound. Different herds of cows may give milk of different qualities, which will make different quantities of cheese.

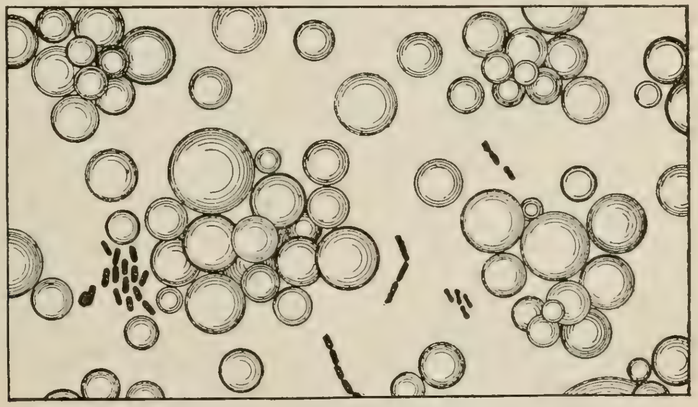

Fig. XI.

[Showing variation in size of fat globules in milk and relative size of milk-souring bacteria and fat globules.—Editor.]

Cheese-making is a process of fermentation. It is very necessary that the right fermentations be present; or, to state it in a little different way, too much of any and of bad fermentations will spoil the cheese. Fermentations are of two kinds: (a) Enzymes, like rennet and pepsin; and (b) bacterial, such as cause the souring of milk.

The bacteria fall into the milk after milking or at the time of milking. If hay or dry fodder has been fed just before milking the dust that has been stirred up will contain millions of germs, which fall into the milk and grow. The dirt on the cows' udders or flanks falls into the milk when the hair is disturbed by milking. The cows' flanks should be moistened with a damp but clean rag just before milking. The milk can should not stand in the barn to absorb barn flavors. The milk should be run over an aerator and cooled immediately after milking. Fig. XII shows the number of germs that may develop from one germ in twelve hours, under different conditions of cooling. This illustration was first presented by Dr. H. L. Russell, of the Wisconsin Experiment Station. If the pails and cans are not clean the milk may be again seeded. Fig. XIII shows where the germs may get into the crevices in pails and cans. Milk sours through the growth of lactic acid producing bacteria. Milk should not be received at the factory when it has more than .2 per cent. lactic acid in it. But milk does not taste sour until it has .3 per cent. acid present.

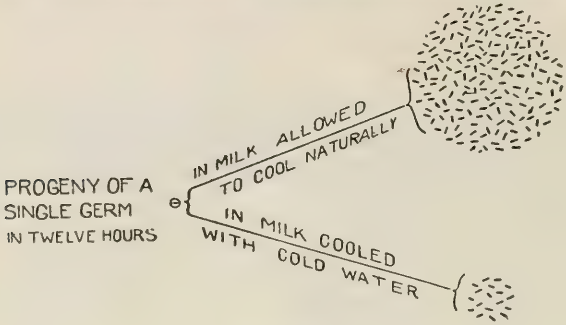

Fig. XII.

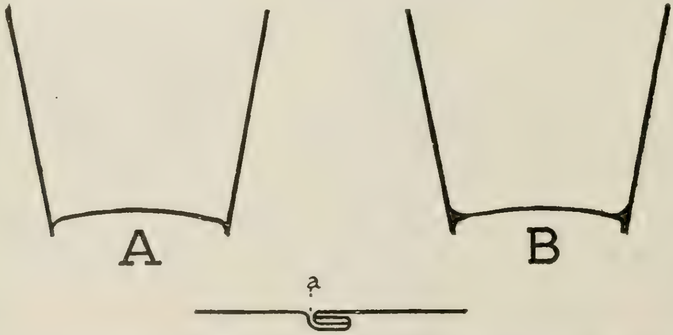

Fig. XIII. The wrong and the right kind of a milk pail. A, the ordinary type of pail, showing sharp angles between sides and bottom; B, the same properly flushed with solder so as to facilitate thorough cleaning. The lower figure represents a joint as ordinarily made in tinware. The depression "A" affords a place of refuge for bacteria from which they are not readily dislodged. This open joint should be filled completely with solder.

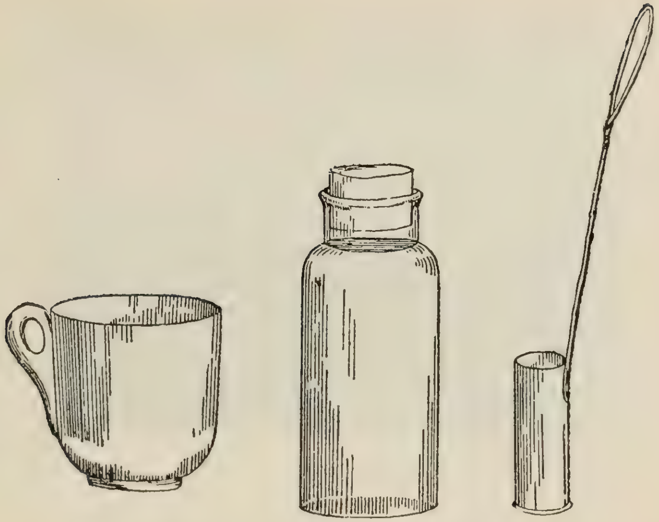

Fig. XIV. Apparatus for alkali test.

Fig. XIV shows a simple acid test. An eight-ounce bottle is filled with water and eight Farrington alkaline tablets dissolved in it. This makes a red liquid. Then a measure is made by soldering a wire handle on a No. 10 cartridge shell. One measureful of the milk in question at the intake is dipped into the teacup and two measures of the red liquid added. If the red color disappears it is because the milk contains more than .2 per cent. acid and uses up the alkali added. If the milk has a pink tint there is not .2 per cent. acid, and the milk can be accepted. But sour milk is not the worst kind of bad milk. Some germs produce gas or bad flavors in the cheese. Fig. XV shows three pieces of cheese curd. One has no holes

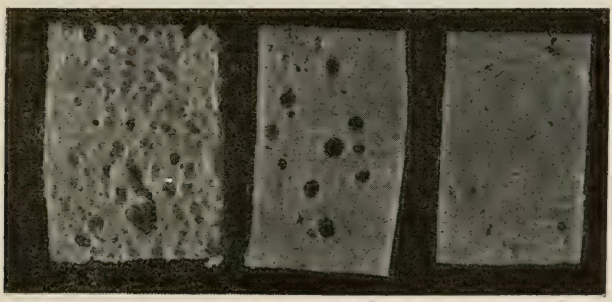

Fig. XV. Three pieces of cheese curd.

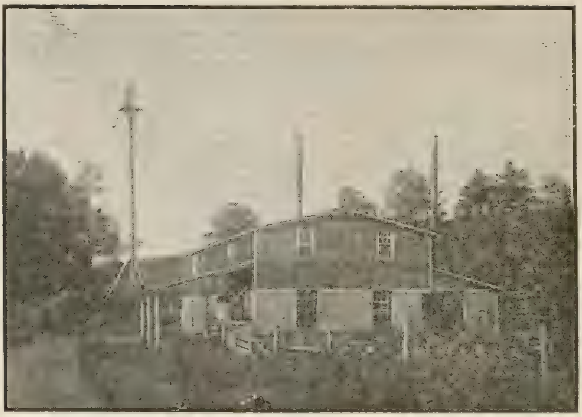

Fig. XVI. Cheese factory in Outagamie County, Wisconsin, with sub-earth duct.

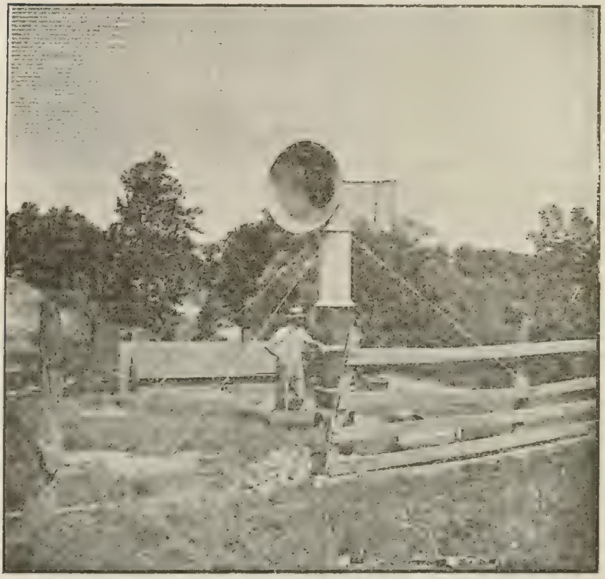

Fig. XVII. Factory in Ohio, showing 18-inch cowl for ventilation.

in it, and is a good curd. The other two have been inoculated with different quantities of a gas germ found commonly in manure. Such milk can be detected by the use of the Wisconsin curd test, which we developed in Wisconsin.

After cheese is made it should be cured in a temperature not to exceed 65 per cent. F. Recent investigations seem to show that the best temperature is between 40 degrees and 50 degrees F., and in the future cheese will probably be cured in central cold storage plants. A cheaper way of doing it is to ventilate a well insulated curing room with air drawn—or rather pushed– through a sub-earth duct. Such a duct is made by digging a trench twelve feet deep and at least a hundred feet long and laying at least three rows of ten-inch tile in the bottom and covering it over. One end of the tile connects with the curing room and the other end connects with a tube reaching above ground and a cowl on top, which always faces the wind. The air flowing into the cowl enters the duct and is cooled in its passage by the cool earth around it. Well-built ducts keep the well-built curing rooms at about 60 degrees F. Figs. XVI, XVII.

THURSDAY MORNING SESSION.

December 19, 1901, 10 a. m.

President: We will call this morning's session to order now, as we are already about fifteen minutes late. We will begin the session by a song from the Reform School Glee Club.

President: We will open the session by calling upon Mr. Newsom to give his paper on "A Consideration of Dairy Rations." Mr. Newsom, of Valley Mills.

CONSIDERATION OF DAIRY RATIONS.

G. P. NEWSOM, VALLEY MILLS.

By the term ration is meant the total feed for twenty-four hours. It shall be our purpose in this paper to treat of dairy rations, common dairy feeds, methods of preparation and feeding, and calculations for balancing the same.

A few questions like the following will bring out what usually is considered in selecting the feeds that shall constitute our ration for the cow.

The first consideration should be the cost. Is it available? Is it palatable? Can it be preserved? Is it concentrated or bulky? How effective is it in producing milk? Can I secure a desirable substitute for it?

A couple of examples along this line will make clearer what is meant. Let us take timothy hay: Cost—Usually high in price. It can always be had on the market if sufficient is not raised.

Is it palatable? Cows will eat it with relish.

Can it be preserved? Timothy hay under favorable conditions will keep for years.

Is it concentrated or bulky? Bulky, a coarse fodder.

Is it effective? Not reputed to be of special value as a cow feed; not the best milk producer.

Can I secure a desirable substitute? Clover hay, alfalfa or corn stover may replace timothy to advantage in a dairy ration.

Then we would rule out timothy hay from our ration on cost, inefficiency, and availability of a substitute.

Now, gluten feed: Cost—Cheap for protein content, the expensive element of a dairy ration.

Is available in the vicinity of starch factories, and may be shipped long distances if a freight rate can be secured that will keep the cost within its value.

Is it palatable? No; but if mixed with bran or corn and cobmeal and fed carefully cows will eat it.

Can it be preserved? It will keep almost as well as bran, and is a concentrated feed.

Is it effective? As a milk-producer it is one of the best concentrated feeds on the market.

Substitutes may be had. The raising of soys, cowpeas and alfalfa will provide a home-grown substitute.

And thus we take up in detail each feed in selecting a dairy ration.

Among the common dairy feeds we may mention clover and timothy hay, corn stover (stalks), corn fodder (ear and stalk), corn, cornmeal, corn and cobmeal, hominy meal, gluten feed, gluten meal, wheat bran, wheat middlings, oil meal, oats, barley, rye, brewers' grains and silage.

Clover hay, when cut at the right time and properly cured, should constitute a part of every dairy ration. In sections where alfalfa can be grown and clover can not, alfalfa should replace clover hay, as it is richer in protein, that expensive and essential food element in dairy rations.

Timothy hay is often used as a dairy feed, but is not specially fitted for the purpose. It will often pay to change it for clover or a concentrated feed, such as bran or gluten feed.

Corn stover (stalks and blades) is a cheap, bulky feed; can be had on any farm where corn is raised, and should constitute a part of every dairy ration, because it is more valuable as a feed than as a fertilizer. It should be cut or shredded.

Corn fodder (ear and stalk) should rarely constitute a part of a dairy ration, unless the growth is very poor or was sowed for that purpose when the stalks are almost all eaten anyhow.

Corn should be fed as cornmeal or corn and cobmeal and 6 cents per bushel should be added to the cost to pay for grinding or crushing.

When properly balanced with other feeds, corn and cobmeal makes an excellent milk-producer. Care should be used to prevent cows laying on too much fat when corn is fed.

Hominy meal is the starchy, carbonaceous part of corn, is poor in protein and should not be fed to the dairy cow.

Gluten feed is very rich in protein, not palatable, and should be fed cautiously and mixed with wheat bran or some other palatable food. When it is available it should be considered in forming a dairy ration. Its value lies in its high protein content.

Gluten meal is richer still than gluten feed, and should be fed with even more caution and may replace it to advantage.

Wheat bran is the classical cow feed, and is fed more, perhaps, than any other concentrated feed and has a rather high protein content.

Wheat middlings and shorts are sometimes used as a dairy feed to advantage, but bran is more common.

Oil meal is very rich in protein, has a laxative property, and on this account should be fed when green feed or silage is not fed. It is also valuable in warm climates, as it gives a firm, solid character to butter. One-half to two pounds per day should be the feed when the laxative property is desired. When fed heavily it loses this power on the system and becomes distinctly a feed. Oats either cut in sheaf or ground as grain make a good dairy feed, and if oats do well on your land and the market price is low, it will pay to feed them.

Barley, rye and brewers' grains are sometimes fed to dairy cows, but their use should be discouraged. There are laws in some cities and towns forbidding the sale of milk from cows fed on brewers' grains. Rye often gives an undesirable flavor to butter, and where fastidious customers are supplied satisfaction could not be given.

Silage is the cheapest and best feed the dairyman can have to take the place of grass. Silage is past the experimental stage, is palatable, nutritious, laxative, all consumed, and little is spoiled in a good, round silo. Silage is preserved grass as corn is only a mammoth grass. It is, however, not the equal of grass, but comes next to it in our list of feeds.

Among feeds that are still in the experimental stage in our State for one reason or another, we mention alfalfa, soy beans and cow peas. These are rich in protein, and when once established on our farms will reduce very materially the cost of our dairy ration.

How often shall we feed? Shall we mix the feeds or give each one separately?

On account of the large storage capacity of the rumen or first stomach of the cow, it will generally be found sufficient to feed twice daily, giving about one-half of each separate feed at each meal; that is, one-half of the bran, silage, hay, etc., in the morning and the other half in the evening. When feeds are given that may impart an undesirable flavor or odor, they should be given immediately after milking and the milk removed from the barn. A little roughage at noon has been given for cows to pick over, but it should not be any more necessary than to do the same at midnight.

When we understand that the stomach of the cow is specially constructed for rolling and mixing feeds we begin to doubt the advisability of mixing by hand. At the Wisconsin Experimental Station a steer was killed fifteen minutes after a full feed given singly, and the contents of the stomach were thoroughly mixed. Hence, we conclude that mixing by hand is not desirable, unless to make the cows eat a food that would otherwise not be eaten. To mix the concentrated and bulky feeds will generally produce some better results at the pail, but will seldom pay for the extra labor involved.

In cold weather the value of warming a feed may be easily proven. Here, again, the cost of warming the feed should be compared with the increase in milk flow. A feed of warm silage is beneficial, and when the other feeds are dry they need not be warmed.

Cooking feeds for cows was recommended strongly fifty years ago, but experiments since that time prove conclusively the fallacy of this plan of feeding. At Popelsdorf experiments in cooking hay showed that with the uncooked hay 46 per cent of the protein was digested, while in the cooked hay only 30 per cent. was digested, a loss of one-third, due to cooking. The cooking of other feeds, in the case of feeding swine, caused an average loss of 6 per cent. in all tests reported.

Every one is familiar with the indigestibility of an egg boiled for thirty minutes as against the one soft-boiled. This is on account of the fact that albuminoids are changed to a less digestible form by heat. All experiments in this country and Canada point to the same conclusion—that it does not pay to cook feed for cows. The editor of the Country Gentleman, in discussing the subject of cooking coarse fodder, once said: "The advantages are very slight and not worth the trouble of either building the fire, cutting the wood or erecting the apparatus, to say nothing of all these combined, with danger and insurance added."

In forming a dairy ration the chemical composition must be taken into account. Every feed-stuff has more or less water, varying from 5.7 per cent. in grano gluten to 89 per cent in silage and 93.4 per cent. in whey. All the remainder of a feed-stuff is known as dry matter. This dry matter is divided into two classes, called digestible and indigestible. No account is taken of the indigestible dry matter, as it is of no value for feed. The digestible matter is divided into three food elements, known as protein, carbohydrates and fats. Hence, feeding analyses show the number of pounds of dry matter, digestible protein, carbohydrates and fats in 100 pounds of a given feedstuff. After much experimenting Wolff, in Germany, laid down a feeding standard of 25 pounds dry matter, 2.5 pounds protein, 12.5 pounds carbohydrates and .6 pound fats for a cow of 1,000 pounds, live weight, in twenty-four hours. Experimenters and feeders in this country have been inclined to reduce the amount of protein, which is the expensive element of feeds, and have still had very gratifying results.

To figure out a dairy ration weigh the clover hay and the corn stover given to each cow. Aim to give each one all she will clean up. If, when you feed again, much is left, weigh it back and subtract this amount from the amount fed; the result will be the amount consumed. Get a table of analyses. One appears in Hoard's Dairyman, of December 6, 1901. The figures show that 100 pounds of clover hay has 84.7 pounds of dry matter. Suppose the average cow consumed five pounds of clover hay. Then multiply the number of pounds of dry matter—84.7 by 5, and set the decimal point two places to the left, which is the same as dividing by 100, and we have 4.235 pounds of dry matter consumed. The table shows 6.8 pounds digestible protein. Multiply this by 5 and set the decimal two places to the left, and we have .34 pound. Carbohydrates 35.8 pounds multiplied by 5, moving the decimal two places to the left, equals 1.79 pounds; fat, 1.7 pound multiplied by 5 equals .085 pound.

Suppose 8 pounds of corn stover were consumed. The table shows that there are 59.5 pounds of dry matter, 1.7 pound protein, 32.4 pounds carbohydrates and .7 pound fat in 100 pounds of corn stover. Multiplying we have in our 8 pounds of corn stover 4.76 pounds dry matter, .136 pound protein, 2.592 pounds carbohydrates and .056 pound fat.

Now, try 30 pounds silage; then add together the figures in each one under each head and compare this with the standard given by Wolff. It will be found to be short in each column, and much shorter in the protein column than in the others. This indicates that the remainder of the ration must be a concentrated one. Suppose gluten feed is available; then, if we feed to the limit, which is about 4 pounds to the cow, add this amount to each column of our ration, figured as before, we are still short, and more concentrated feed is still needed to bring it up to the standard. Let's try bran, 4 pounds. This ration figured out in tabular form looks as follows:

FOODS FED DAILY.	Dry Matter.	Digestible Nutrients.		
		Protein.	Carbo-Hydrates.	Fat.
Clover hay, 5 pounds	42.35	.340	1.790	.085
Corn stover, 8 pounds	4.760	.136	2.592	.056
Corn silage, 30 pounds	6.270	.270	3.390	.210
Wheat bran, 4 pounds	3.524	.504	1.544	.120
Gluten feed, 4 pounds	3.600	.932	2.028	.108
Totals	22.389	2.182	11.344	.579
Wolff standard	25.	2.5	12.50	.6

The silage could be increased to advantage. Wolff and Lehman, of Germany, have given the following standards, depending upon the quantity of milk produced:

When Yielding Daily	Dry Matter.	Digestible Nutrients.		
		Protein.	Carbo-Hydrates.	Fat.
11 pounds milk	25	1.6	10	.3
16.6 pounds milk	27	2	11	.4
22 pounds milk	29	2.5	13	.5
27.5 pounds milk	32	3	13	.8

These standards will serve to bring out the fact that few cows are to be fed exactly alike. This table takes into account the quantity of milk produced and is a safe guide.

If we reason conversely if we feed a cow 3 pounds protein, 13 pounds carbohydrates and .8 pound fat, we should expect 27½ pounds of milk per day. But there are conditions that may reduce this quantity of milk in a short time. Among them we may mention period of lactation, age of the cow, unkind treatment, running, excitement, lack of care, disease and unsound or decaying food. We may expect the results given by Wolff only when conditions are favorable and within our control.

But, we may ask, why bother with a standard when so many things may reduce the effect of the balanced ration?

But such conditions exist regardless of the ration, whether balanced or not, and when the balanced ration is used better results are had than when an unbalanced ration is used. Then, too, if a man will go to the trouble to figure out a dairy ration he will be almost sure to take better care of his cows, look after their comfort and get better returns.

President: If there is any one that wishes to discuss this subject, we will hold it open for a few minutes.

Mr. Barrett: I would like to ask Mr. Newsom a question. He has named three important grain feeds. By that I mean bran, meal and hominy meal, and three derived from the stalk part of the vegetable. I would like to have him name them in the order of their importance.

Mr. Newsom: The silage is perhaps the most important feed, but that is not sufficient. There is no one feed that is sufficient. Of the feeds we have here, I should recommend, if a person was going to confine himself to three feeds, silage, clover hay and bran. I will not attempt to name the order in which they should come, but if I was confined to three feeds, those would be the three.

Mr. Burnside: I would like to ask Mr. Newsom, in feeding his cows to supply them with sufficient protein, what he considers best at present prices?

Mr. Newsom: I think gluten feed about as cheap a protein as we can buy now.

Mr. Burnside: I don't agree with you. I would like to ask if he ever used cottonseed meal as a source of protein?

Mr. Newsom: Yes, sir.

Mr. Burnside: What do you pay for bran now?

Mr. Newsom: I pay about $22 a ton; that is about all it is worth, and that is one reason why I name gluten feed. At that price the protein in bran would be 6, 7 or 8 cents a pound, and in gluten feed it would run 3½ cents a pound; but gluten feed, the cows won't eat by itself.

President: Why not feed gluten meal? It is richer in protein, although it is not more palatable.

Mr. Burnside: In my experience gluten meal is very palatable. Our cows will take hold of it right away.

Mr. Newsom: Gluten meal will be as cheap as the gluten feed.

President: You have about 28 to 40 per cent. portein in gluten meal and 16 to 20 per cent. in gluten feed.

Mr. Burnside: What is that worth?

President: About $26 a ton.

Mr. Burnside: I can buy cottonseed meal for $25.

President: I think in the selection of this feeding stuff one should have regard for the purposes he wants to feed his cows for. I think cottonseed meal, as a butter producer, does not make first-class butter. It may produce a slightly objectionable condition of the fat. It is a harder fat. Butter that is made in the south will ship better when made from cottonseed meal, but it has been shown by careful experiments that as far as the flavor of the butter is concerned, it is one of the poorer materials used for feeds.

Mr. Burnside: Did you ever have any kick in that respect in connection with silage?

President: I can not give any instance. I know that matter has been discussed a great deal among scientific men.

Mr. Burnside: What I am concerned in is to get rid of clover hay. I want to feed silage, shredded fodder, and am buying my concentrated feed. I want to have bran, gluten feed or cottonseed meal.

Secretary: Why do you want to get rid of clover hay?

Mr. Burnside: Simply because it is not handy. You have to have a double force of men all the time to harvest it. Clover hay is a hard thing to cure first-class. Clover makes a great feed for the cow, but it is hard to get and hard to cure and get it in in the right kind of shape, and we feel that the corn field is the place to get our feed.

President: If you can buy cottonseed meal at $25 a ton, I am perfectly satisfied it is the cheapest thing I have heard of so far.

Mr. Burnside: I would like to have this ration criticised. I feed my cows about forty pounds of corn silage; I feed them four pounds of bran, two pounds of cottonseed meal, and I give them all the shredded fodder they will eat—all they will take up and not waste.

Mr. Johnson: Is this cottonseed meal guaranteed by the manufacturer to contain so much of these ingredients that you get for $25 a ton?

Mr. Burnside: I don't consider a guarantee of that kind worth that (snap of finger). They don't amount to anything. I bought cottonseed meal last summer for $23. I bought some last summer that I think was absolutely pure, but you can't tell. This winter I bought cottonseed meal; the color was all right, except you could see little hulls in it, and when I went to Cincinnati I told the fellow where I bought the meal. I hadn't paid for the meal, and I told him I got in a load, and kicked about that cottonseed meal, and he said: "All right; what is it?" I said it was adulterated, and he says: "Have you got it at home?" I said "Yes." He says: "Did you pay $25 for it?" and I told him I did. He said: "Send it back; it is worth more money." When they came to examine the meal they said that was true, there were some hulls in it, but it was all right with that exception. I would think that if some of these people would try cottonseed meal in limited quantities they would like it. I would not want to feed more than two or three pounds a day, but, according to the amount of protein it contains, it is worth three times as much as bran for that purpose, and where a man feeds like I do—silage and corn fodder—cottonseed meal is the cheapest feed to get.

President: I don't know of an agent in Indiana for cottonseed meal. Does anybody? I don't know of anybody that sells it. You have got to send out of the State to get it. Now, cottonseed meal and oil meal and gluten meal are all in the same class; they are all highly concentrated protein feeds. I consider that oil meal has a value by itself over the others in that it conditions animals as other feeds do not. It is often used as the main ingredient in condition powders. We have to pay an enormous price for a package of condition powders, when it is perhaps not worth any more than ordinary oil meal. The general character of the feed is such that it brings out a nice glossy coat, and here it has a value outside of the amount of protein in it, and it does not cost ordinarily more than cottonseed meal, although I doubt if one is able to buy cottonseed meal today for less than $30 a ton.

Mr. Burnside: I got that meal within the last ten days, but I don't suppose I could get it now.

President: Of course, the feeding question is the all-important question with our farmers, but I consider gluten meal a very profitable feed. I purchased five tons for feeding at our place, and I could not ask for a feed to be relished more, and I don't know of anything that will give a more favorable or rapid increase in production. The question was asked if the manufacturer guaranteed the composition of the cottonseed meal. In the east, cottonseed meal is oftentimes adulterated, and so is oil meal, and it may be true that gluten meal is, but I have never heard the same complaint about that that I have about cottonseed meal.

Mr. Mills: Do you mean the mixed gluten?

President: At our place we have what is known as the straight gluten meal.

Mr. Mills: I have fed it for some time, and one is the pure gluten, and the other is the gluten feed. The pure gluten they guarantee 36 per cent. of protein and 4½ per cent. of fat. The mixed feed 24 per cent. protein and 3 per cent. fat. I use the mixed feed on account of the extra bulk I would get.

President: That is part gluten meal and gluten feed mixed together; they mix them.

Mr. Mills: Considering the price of both, mixed feed at $19 and the other at $22, which, in your judgment, would be the proper feed to feed?

President: I didn't have any idea you got that amount of protein you say.

Mr. Mills: It is guaranteed on each package.

President: I would rather pay $22 for the 36 than $19 for the other.

Mr. Mills: You would have considerable less feed and bulk. The reason I choose was because I could feed a larger bulk.

President: There is one reason why a person can afford to pay a higher price for the gluten meal. Gluten meal is more digestible than gluten feed, on the same basis that ordinary cornmeal is more digestible than cornstalk. The more woody fiber your have in an article of feed—the more crude fiber—the more difficult it is to digest, and the nearer you approach to the gluten feed, the more of the bran and chaffy part of the corn you have. This matter has not been referred to, but, as a product of the starch factories, there is quite a wide variety of names given to these products that contain a good deal of protein. There are fifteen or twenty products sent out by the starch factories that have different names, and one can't always tell by the name what material he is getting.

Mr. Mills: I would like to inquire the relative value of millet as compared with timothy and clover hay.

Mr. Newsom: I think clover hay, good clover hay, will show better results than millet, but millet has shown better results than timothy hay. I would like to ask Mr. Mills if he has ever noticed the way the cows will eat the gluten feed?

Mr. Mills: We feed it in bran; some of our cows seem to like it and others don't. Some we feed it with silage, and, with but one or two exceptions, they seem to prefer the other at the present time.

Mr. Newsom: I would like to say, while we are on that subject, that there is no one set of feeds that can be set down to everybody in the State. A person near a starch factory would say gluten meal, and one away would say something else. Each man must feed what he has nearest home, and can get the cheapest. If you can get clover hay, that ought to be fed; and if you can get alfalfa to do well, alfalfa ought to be fed. There is no one feed that will suit everybody. You have to do this yourself to suit the surroundings.

Mr. Burnside: I would like to ask Mr. Newsom if a man can get the best results from the milk cow by feeding silage, shredded fodder or gluten meal, or bran, or whatever he pleases.

Mr. Newsom: I think a man can get results that ought to be entirely satisfactory by feeding silage and corn fodder, and then bring up your protein with your concentrated feed; there is no reason why he should not get the best results.

Mr. Burnside: Do you feed any corn besides the corn in your silage?

Mr. Newsom: Not very often; we prefer to feed the corn to our hogs, and buy the concentrated feed for the cows.

Mr. Barrett: I would like to ask if the per cent. of protein is based on pure bran—pure hull?

Mr. Newsom: Mr. President, these tables are based on the average bran that we find on the market; whether it comes from the pure hull, I don't know. These tables are supposed to be a guide to the man that goes out in the market to buy his stuff. These tables are our only authority.

Mr. Barrett: Can some one answer how much protein there is in what is called ordinary shorts?

The President: There is about the same as bran. There is very little difference. There is a little more starch. There is about 12 per cent. of digestible protein in each.

Mr. Burnside: Bran is more desirable on account of it being light. You want as little shorts or middling in the bran as you can possibly get.

Mr. Newsom: I think that is true. A feed that will form into a doughy mass is not a desirable feed; it is not the best thing for a cow. We want something that the cow can digest.

Mr. Burnside: What are you feeding your cows now?

Mr. Newsom: Clover hay, corn fodder and, at present, some bran.

Mr. Burnside: How much bran are you feeding them?

Mr. Newsom: I don't know, exactly; we vary the feed according to the quantity of milk the cow is giving, but it would run along about four pounds.

Mr. Burnside: A day?

Mr. Newsom: Yes, a day.

The President: I want to ask the question, which was suggested by the question asked by Mr. Burnside, how many persons in this audience that own siloes use them? (Those doing so held up their hands.)

The Secretary: Seventeen, I make it.

The President: There is a question in connection with that: How many of you men that feed corn silage feed cornmeal?

The Secretary: There is one person.

The President: Mr. Newsom says, also, he is feeding some now.

The Secretary: What are the particular conditions which make it desirable to feed it?

A Voice: The price of it.

The President: We are feeding cornmeal in addition to silage.

Mr. Jamison: Mr. President, in feeding corn we feed it more because we have it on hand. It is there in the way, and we feed it rather than feed it to hogs.

The President: How many of you that put corn in your silos had good corn this year?

Mr. Burnside: What do you call "good corn?"

The President: We will say twenty-five bushels to the acre.

Mr. Burnside: We didn't have it.

The President: Mr. Husselman is here, and they feed quite an extensive herd at his place at Auburn, and I would like to have him tell us what they feed their cows.

Mr. Husselman: Following is the ration I fed our cows this past winter. First feed in morning: Four pounds bran, followed with thirty-five pounds silage immediately after milking. About 1 p. m. we fed in the racks about twenty-five or thirty pounds millet hay per cow; at 3:30 p. m. we fed about thirty-five pounds of corn fodder and clover hay, cut fine and mixed with bran and cornmeal to each cow; bran and cornmeal in weight about three and one-half or four pounds to the cow. This ration was mixed in the morning and left soak until fed in the afternoon. We got the very best results from this method of feeding, which is a very economical way of feeding, as the cut feed goes farther and gives better results than when the whole feed is given.

The President: How much of that thirty-five pounds that you feed at night is cleaned up?

Mr. Husselman: It is all eaten up that evening. Of course, we do not mix so much bran with it; but there is no loss, because the feed is all eaten by morning.

Mr. Burnside: You do not like to feed them silage before they are milked?

Mr. Husselman: No. If your customers detect the least little bit of flavor in the milk they come to you right away, and we find that by feeding silage once a day we do not have so much complaint about the milk.

Mr. Burnside: How much bran do you feed a day to the cow?

Mr. Husselman: About four pounds, and at the present time we can't buy bran at home; we have to have it shipped in. I bought two tons Tuesday, before I started here, which cost $22 and the freight, $1 a ton; I don't believe we can buy very much longer at that price. We can't buy gluten meal for less than $26. Last winter we tried gluten feed—gluten meal, rather—and I find we did not get satisfactory results from it. I don't know why, but we did not.

Mr. Burnside: I would like to ask one question in regard to bran. Have any of these dairymen been in the habit of laying in their bran in the summer just before the millers begin to grind their new wheat? I filled my granaries full of bran, just before they begun to grind new wheat, at $12 a ton, and I believe that is the time of year for all of us to buy our bran. The old wheat bran, I never had a bit of trouble in keeping it. I have never had a bit of trouble about it lumping.

Mr. Husselman: We always do whenever we can get the bran. Up until this year we have been able to put in ten tons of bran at $10 a ton, but we could not do that this year. We have bought our bran of one man for the last five years.

The President: This is a very interesting subject, but it is a quarter to eleven, and we have two other subjects which come up, so I am going to call for the next paper, that by Mr. Shugart. I suppose he will also touch on some of the material we have been discussing this morning.

A STUDY OF THE MILKING HERD.

J. V. SHUGART, MARION.

In selecting a dairy herd, one should spare neither pains nor means in obtaining the best that could be procured—to secure cows for their foundation herd that would give the largest quantity and best quality of milk at the least cost of production. Of the many different breeds of cattle that are used for dairy purposes, I prefer the Holstein-Friesian cattle. We have tried the Jersey cattle. They were not satisfactory, as they did not give enough milk to make them profitable to the dairyman who sells his milk to the city trade, and their offspring are so small they are almost worthless, except for veal, and they are not the best quality for that. The Jersey cow, however, is noted for the high per cent. of butter-fat in her milk, making her profitable to one where butter alone is the aim. We have tried the Durham, and found them unprofitable as a dairy cow. The Durhams, as a breed, are superior for beef production, but for large productions of milk they are not there. Very often we find a Durham cow that does not give enough milk to support her calf. As I have stated before, of the many different breeds of cattle that are classed as dairy cattle I prefer the Holstein-Friesian cattle. They are noted for their large milk production; for their large butter and cheese production, and for their large and vigorous calves. They are, in my estimation, the ideal dairy cattle. I will give what a few of our cows have done for us with only ordinary care and feed, such as we give them every day in the year. These cows have not been officially tested. The test was made by weighing the milk daily, saving a sample of the milk from each cow, and sending it to the creamery to be tested for butter-fat. The tests were as follows:

NAME OF COW.	Age.	Pounds Milk Per Day.	Per Cent. Fat.
Tirania Lady Aouda	5 years.	79	3.8
Tirania Lady Calantha	2 years.	52½	3.4
Netherland Beauty's Saldene Queen	5 years.	57¼	4
Teetje Jangen Saldene Queen	2 years.	50	3.6
Buckeye Lass	6 years.	64½	3.9
Buckeye Lass 2d	3 years.	48	4.2
Buckeye Lass 3d	2 years.	49	3.9
Netherland Maggie 3d	3 years.	64¼	4

We sold from July 1, 1900, to July 1, 1901, 56,948 gallons of milk from fifty-two head of cows. No account was kept of the milk used in our family, nor for the two tenants and their families. This makes an average of a little more than three gallons per cow per day for the entire year.

This breed of cattle is rapidly occupying the richer and more important dairy sections of our country; hence there is a great demand for information in regard to them. These cattle were introduced from the province of North Holland and Friesland, a section of the kingdom of Netherlands bordering on the North Sea, commonly called Holland. The dairymen of these provinces are descendants of the ancient Friesians, and their cattle are lineal descendants of the cattle bred by them 2,000 years ago. From the earliest accounts of dairy husbandry these cattle have been used and developed for dairy purposes. North Holland has been mainly devoted to cheese production, and Friesland to butter production. As an illustration of the extent of the latter production the following statistics are quoted: The area of Friesland is 1,253 squares miles, fifty-three less than the State of Rhode Island. In 1874 England imported from Friesland 40,763 cwt. of cheese and 266,041 cwt. of butter. Reduced to pounds, these importations were 4,565,456 pounds of cheese and 29,796,592 pounds of butter. In 1879 the number of cows in Friesland was 144,802. Assuming an equal number in 1874, this importation of butter from Friesland was an average of 205¾ pounds for all the cows, old and young, owned in that province. Even if there were no home consumption, and no sales to other countries, these exports alone sufficiently demonstrate the great capacity of this breed.

THESE CATTLE IN OTHER PARTS OF EUROPE.

If allowed to spread without artificial restrictions, the value of a breed may be judged somewhat by the territory over which it spreads in competition with other breeds. Especially is this true of dairy breeds found, as such breeds are, only in civilized countries and on valuable land. This breed is found in more countries, occupying more territory, and probably producing more milk, cheese and butter than all other dairy breeds combined. These facts are brought forcibly to our attention by the reports of American Consuls in the commercial centers of Europe in answer to inquiries made by our Department of State in 1883. Going south from the two Netherland provinces—North Holland and Friesland—where this breed originated, and from whence it is mainly brought, it has spread over the provinces of Utrecht and South Holland, almost exclusively occupying them. Farther south, in the kingdom of Belgium, the most densely populated State in Europe, three of its provinces are largely devoted to dairying—Antwerp and East and West Flanders. The peculiar location of Belgium makes it equally easy for the dairyman to import from England, North Holland and the Islands of Jersey and Guernsey.

The government has granted subsidies for the importation of foreign breeds to improve the stock of the country. No country is so well situated to pass judgment on the various breeds. The dairymen of this country have been acting the part of a great jury. Their suffrages are shown in the reports of the Consuls accredited to its provinces. Says Consul Stewart, of Antwerp: "Antwerp prefers to improve her stock by the introduction of the Dutch race, because the dairy is the result aimed at, and but little attention is paid to other products. The cow is valued only for her milk-giving qualities, and for this purpose the Dutch are much the best."

Says Consul Wilson, of Brussels: "In the Province of Antwerp the production of milk and butter and the raising of vegetables for the London and Antwerp markets are found so much more profitable than the growing of beef cattle, that the farmers of that district will have nothing to do with but such cattle as produce the largest amount of milk upon the smallest amount of food; and for this they prefer the pure Dutch cow, or her crosses with the Flemish animal."

IS THIS BREED A GENERAL PURPOSE BREED?

If a general purpose breed is one that is equally valuable for each and every leading purpose, for which cattle are used, it is not such a breed. This breed excels in milk production. It is superior for veal production, and valuable for beef production. If this combination of qualities defines a general purpose breed, it is such a breed. For generations the natural conditions under which these cattle have been developed have been most favorable for this combination of qualities. Looking upon one of its model cows, the broad loin and rump seems just the place for the growth of the finest quality of beef, and the fit support of the capacious udder; the straight quarters and well-rounded body can not detract from milk production. Her calves are large at birth, and they grow and fatten with great rapidity.

In Holland and Belgium this combination of qualities and uses is universal. The cows, no matter how good, are seldom kept until they become old and worn-out shells, valueless for beef, and not fit to propagate their kind, but are sold for beef while they are vigorous enough to put on flesh, profitable alike to producer and consumer. This is the element that produces endurance under great strain of any sort—in the race horse, under the strain of terrific speed; in the milk cow, under the strain of enormous production. The presence or absence of this element is especially manifested in the growth and development of the young of the different breeds. Observe the calves of two different breeds: Of one they live and grow without special care or attention; of the other they perish easily if they do not have the best of care. The difference is simply in constitutional vigor or vital force, born in the calves of the one, and not born in the calves of the other. This difference continues throughout the lives of these animals. It may not be manifest so conspicuously in after life, yet it affects all their relations to their food, care and production. In what does it consist? Is it in possessing what is sometimes called the nervous temperament? Not infrequently we find the offspring of breeds that lay especial claim to this temperament especially lacking in ability to live and rapidly develop without special care. It is a secret force hidden in the breed and in the animal. Perhaps it may be properly called the vital temperament. We claim that the bulls of the Holstein Friesian breed possess this vital force or temperament more strongly than those of any other improved dairy breed. The breeders in Holland and Friesland have always avoided in-and-in breeding.

In proof that this breed maintains a high standard of vital force we point to its use in almost every climate, including that of northern Russia, nearly up to the Arctic Circle. Here in America it is as hardy as our native cattle; its calves are raised without difficulty. Taken from their dams at three days old, and reasonably fed on skim milk and a little oil meal, they grow like weeds. Given plenty of food, no matter if much of it is roughage, they develop rapidly. The heifers usually drop their calves when about two years of age, and henceforward are profitable to their owners.

FEEDING QUALITIES.

These cattle have great digestive and assimilative powers. In regard to the feeding qualities of North Holland or Friesian cattle, the conclusion reached in a long period of investigation is as follows:

During the period of milking the cows appear to be in poor condition, but they fatten readily when dry. They, however, always require an ample supply of food, but are by no means choice as to the quality of the food. I would underscore this last sentence, because it describes the two most important characteristics of profitable dairy animals. There can be no profit in animals that consume only the necessary food of support. The more they can consume, digest and assimilate above this, the more profitable. The other characteristic is in the fact that dairy animals should by no means be choice in the quality of their food. Cows that will freely consume the roughage of our farms, and transform it into valuable products—milk, butter, cheese, veal and beef—are more valuable than those that require the costlier commercial feeds. These cattle from calfhood upward are by no means choice in the quality of their food.

SIZE OF COWS.

This depends somewhat on the liberality with which they are fed before reaching the age of maturity. In their native homes they are smaller upon the sand and peat lands than on the much more fertile clay lands. This is recognized in admitting animals to their herd-books. The kind of soil on which they are raised is always recorded in connection with their measurements. In ordinary milking condition, at full age, they range in weight from 1,000 to 1,500 pounds. Some of the more noted cows imported to this country weighed as follows: Princess of Wayne, at seven years, 1,370 pounds; Mutual Friend, at three years, 1,120 pounds; Aggie, at eleven years, 1,375 pounds; Clothilde, at seven years, 1,571 pounds; De Kol II., at four years, 1,240 pounds; Pauline Paul, at eight years, 1,460 pounds; Jewel, at eleven years, 1,290 pounds.

The average weight of full aged cows (five years old and over) that were received for registration in the Fourth Volume of the Advanced Register was 1,262 pounds; the average measurement of these cows was as follows:

Perpendicular height at shoulder, 51.8 inches; hips to center of chine, 53 inches; length of body in a straight line, diagonally drawn from extreme point of shoulder to extreme point of rump, 64.9 inches; length of rump, from front of hock bone to extreme point of rump, 21.4 inches; width of hips, 21.9 inches; girth at smallest circumference of chest, 75.6 inches. The most important of these measurements are circumference of chest and the two measurements directly over the udder enclosing the pelvic region—width of hips and length of rump. These are all especially large. The first is indicative of great vigor; the other of large offspring and milk-giving capacity.

It will be seen from the above weights and measurements that these cows are among the largest dairy cows known. No doubt that size has an important bearing upon the economical production of milk and butter. We quote from a work upon feeding animals, by the late E. W. Stewart: "It may be stated as a general law that the food of support decreases proportionately with the increase of size in the animal. The truth is that animals never consume in proportion to live weight, age, conformation, inherited constitution and many other things having great bearing as to the amount of food that is required for support."

We must conclude that size, all things being equal, is favorable to the economical yielding of milk; that it actually takes less feed to produce 100 pounds of milk with a cow of equal merit weighing 1,000 pounds than with one weighing 800 pounds. This statement is based on data furnished by several prominent investigators in Europe, who conducted many searching trials for determining the effect of size on food of support, and the relation of food to the quantity of milk produced by dairy cows of different weights.

Last year Wisconsin Experimental Station picked up a dairy herd of which the nine best were of pronounced dairy type. It kept an account of all food consumed for a period of a year, and of the milk and butter returned by the cows. The value of the food was calculated at farmers' prices, the butter at twenty cents per pound, the skim milk at fifteen cents per 100 pounds. Of these nine cows, four weighed over 1,000 pounds each, and five under 1,000 pounds each. The average of the four, 1,158 pounds, and of the five 855 pounds. The average net profit of the four was $67.96, and of the five $60.90. The difference, as will be seen, was about $7.00 each, or nearly 11¾ per cent. in favor of the larger cows.

The President: Any questions to be asked in connection with this subject?

I will take this opportunity to thank the Superintendent of the Reform School for this beautiful gavel for maintaining order in this Association. I assure you that if we have any tendency to be stormy in the future, I will pound peace and quiet into the Association. We will accept this with the thanks of the Association, and it will be passed from generation to generation to maintain order with.

We will now have a selection by the Glee Club.

Selection by Reform School Glee Club.

The President: Professor Decker finds it necessary to get away on the noon train, and so I have taken the liberty of changing his subject to this morning and placed Professor Erf's for this afternoon. We will hear Professor Decker next on the subject of

HOW TO GET A BETTER PRICE FOR BUTTER.

PROFESSOR J. W. DECKER, OHIO STATE UNIVERSITY, COLUMBUS, OHIO.

I want to say that I am glad that I came to your State Dairy meeting, and that I have enjoyed it every minute of the time I have been here, and not least among the things that I have enjoyed has been the singing of the boys. I wish when I was a boy, I could have had training equal to these boys.

The subject, "How to Get a Better Price for Butter," is one that is very easily answered—make better butter. I don't mean this for a joke at all. I remember one of the farmers' institutes, when George McKerrow, who is now Superintendent of Institutes in Wisconsin, was present at Manitowoc. They had a three days' session. He was to close the institute with a talk on sheep husbandry, and he said he hoped they would all ask questions when he got through, because that was the way to have a good institute. In the audience there was an old Dutchman on the front seat, and the speaker cracked jokes, but he would not smile at all. After Mr. McKerrow got through, he asked if there were any questions, and the Dutchman raised his hand. "What is it?" he says. "May I ask a question?" Mr. McKerrow says: "Yes, we would be glad for you to ask a question." He says: "Why isn't there so much black wool as white wool?" And, after some thought, he said: "I don't know." The Dutchman says: "Well, I tell you," he says, "it is because there was more white sheep."

Now, to get a better price for butter we must make better butter. It is a characteristic of mankind, and especially farmer kind, to want a little higher price for the products they have to sell, and it does not seem to occur to them that their products are not just the very best to be had. It hardly seems possible, but there is more butter made on the farm than in creameries, and the greater part of this farm dairy butter is of poor quality. It is mottled, greasy, off in flavor and put up in poor packages and sold to grocers, who care more for the $10 worth of trade they are getting than the $1 worth of butter they are buying. Some of this is really pretty good butter, and worth all or more than the price the grocer pays for it. The next farmer that comes along has butter that is not worth 10 cents a pound, but he knows that the grocer has paid 15 cents to farmer A, who has just been there, and of course his wife can make just as good butter as A's wife, and he must have the same price. It would be unwise for the grocer to tell him the truth about the butter, for he can not afford to lose that $10 in trade, and so he simply says nothing about the 50 cents' loss he sustains on the poor butter.

Now what does the grocer do with the butter thus obtained? He can not sell the most of it to his trade. He dumps it all together and it is sold, not at 15 cents, but at 10 cents a pound to process butter-makers. These process butter-makers melt it and blow the bad odors out of it and work it over into second-hand butter, but the blast that has been sent through it does not purge it of all its sins. It has lost its reputation at the hands of the farmer, and, while it may be better than it was, it can never be what it might have been if it had been made right and dressed up in a nice suit of clothes to begin with.

There are dozens of these process factories turning out tons of butter daily, and it is a sad commentary on farm dairy butter-making to know that a supply of material for such a vast business is possible. Think of the dollars that might be going into the pockets of the farmers if they would do differently. Instead of going to the trouble of making a poor article with poor facilities, and losing a third of the butter-fat in skim milk and butter milk, and selling it at 15 cents, for the grocer to lose 5 cents on, they might be getting 20 cents at the creamery.

Let us stop and look at the defects of farm dairy butter. Perhaps we had better go two steps farther back, and observe that in the first place the farmer may be keeping cows that do not pay for their board, and he charges the butter business with not being profitable, when the cause is with the poor cows. The milk is handled by antiquated methods, either by raising the cream by gravity or dilution methods. Let me say right here that by the dilution method about one-third of the butter-fat is lost, beside making a poor flavor. The price obtained for this butter-fat that is lost is among the "might-have-beens." It might have been twenty cents a pound instead of going into the swill barrel.

Then the cream taken is too thin to churn economically, is ripened unevenly and churned at too high a temperature. There are three objections to churning at too high a temperature. First, more fat is lost in the butter milk, and of course the price is lost with the fat that is lost; second, the butter milk does not leave the granules as readily, and if too much butter milk is left in the butter it will not hold flavor; third, the grain is soft and the butter can not be worked without making a greasy texture. The salt can not be distributed evenly all through the butter, and wherever the salt strikes it deepens the color. Uneven salt, therefore, makes uneven color, or, as the buyer says, it must have come from a brindle cow. The consumer in the city who knows very little about country ways says that the butter has lard mixed with it. He certainly knows what he is talking about, for he can see with his own eyes the lard that has been unevenly mixed with the butter. The color gives it away. This may seem as strange to the farmer as it does the city cousin, who asked to see the cow that gave the ice cream; but it is not so funny, for the color of butter means dollars and cents to the farmer. If you want to get a better price for butter, just make sure that it is not mottled. Then there is the matter of package. We take a man that is dressed neatly for more than we do one that is slovenly dressed, though the former may not be the equal in ability of the latter. We have heard that a $50 saddle is often found on a $20 "hoss," but the $20 "hoss" will probably sell for at least $35, because of being associated with that $50 saddle. So it is with butter. A poor package may reduce the price 5 cents a pound.

Farm dairy butter is often wrapped in pieces of garments or bedding, that have been worn out in the service for which they were made; or a package that was not full was sent to market in that shape or mussed over on top with a ladle, instead of being cut off evenly with a string; or perhaps it was put up in mussy rolls that are hard to handle, instead of prints that can be wrapped neatly and packed close together, and cut to advantage in the hands of the consumer.

I am a believer in the creamery where one or two or three men together make it their business to study all of these problems and make a butter that is better than second-hand process butter. This is an age of specialties, and the farmer had better specialize in taking better care of his cows, and by giving them his undivided attention, produce more and better milk.

My advice, however, to the farmers is not to jump into a contract for a butter factory without knowing what they want. By seeking advice from the agricultural college or experiment station before buying, and then acting on the advice so obtained, they will get a better equipment for less money than by taking the advice of an agent who wants to sell his goods.

Promoters who spend a month or two in a community working up a creamery have to be paid for their time.

These, then, are my suggestions as to how the farmer can get a better price for his butter.

The President: We have time for a discussion of the subject.

Professor Decker: I have written this with a view of bringing out discussion.

The Secretary: I would like to ask Professor Decker what he considers the conditions, climate, etc., best adapted for dairying?

Professor Decker: I don't see any reason why we can't dairy as well in Indiana and Ohio as they do in Illinois and Wisconsin, Michigan and Minnesota. Of course, high temperatures in summer are against us, but they have hot weather in those States at that time. We need good water. Of course, we need to keep things clean; that is at the bottom of the dairy business. I don't see why we can't keep things clean in Ohio and Indiana, as well as they do in the States further north.

The President: We are a little cleaner here than they are up there.

Professor Decker: I hope you are, and, with the modern refrigerating machinery in the creameries, we can compete with the people farther north.

The President: Don't you think it would be a good idea for the Dairy Association to begin a campaign on grocers in respect to the price of butter?

Professor Decker: I think so.

Mr. Drischel: What plan would you suggest to educate the farmers' wives on the test basis?

Professor Decker: On the test basis? The nature of the average farmer seems to be so constituted that he thinks his wife can make just as good butter as his neighbor's can, and if the grocer tells him the truth he will go some place else to trade where they won't tell him the truth, and where he will get a good price for his butter, although it is not as good butter as the grocer gets for that money; but he will do his trading there, and it can be made back in this way.

Mr. Drischel: On the same plan, along in 1892, we bought our milk by the hundred, when we put in the Babcock test, and now they are educated up to that point where they believe in the Babcock test, and I think the merchant should have the same kind of a test basis.

Professor Decker: I think so, if the merchants would all pull together on that.

Mrs. Shaw: I will say, Professor Decker, that I do not have to sell my butter to the grocer, and I pity the woman who does. A woman may make a good pound of butter, and sell it to the grocer, and he will put it in the back part of his store without any cover on it, and in the store you will sometimes find a lot of men, some of them smoking, and this will spoil the best pound of butter made. I think if the grocer will prepare a place in his store where he can take care of butter, the women are sharp enough to appreciate it. I know it is true that some of them make bad butter.

Mr. Burnside: I know we have had such an experience with our grocery people. We feel that we make good butter, and they put it in a refrigerator, and they will have bacon and cabbage and everything else in that refrigerator with the butter, which will take up the odor; and then they blame the creameries, and they do the same thing with the farmer's butter.

The President: Why don't you make a contract with the grocer that he shall buy it under certain conditions?

Mr. Burnside: We did make a contract if they did it any more they could not have any.

Professor Decker: That is a pretty good way to take them.

Mr. Burnside: There is a question I would like to ask you. I would like you to tell me why there is so much difference in the market of Cincinnati between Ohio creamery butter and Elgin butter? Today Elgin butter is 26½ and Ohio creamery is 22½.

Professor Decker: It is simply because they have not been educated up to know that we can make as good butter in Ohio as they can any where else. We made our exhibits at the Pan-American Exposition, and we showed them that we stood up with the rest of the world. We are going to take care of that all right.

Mr. Burnside: I think the people in Ohio can make as good butter as any one else.

The President: Why does yellow butter bring more than white butter in Ohio?

Professor Decker: I will tell you. Yellow is gold, and we are gold people over there. [Laughter.]

The Secretary: I suppose the same thing applies to oleo, does it?

Professor Decker: I suppose so.

The President: In relation to this matter of the farmers' wives making butter, I want to tell you of an experience we had at a farmers' institute. There was some money raised for offering prizes to the farmers' wives to bring in country butter and compete for the prizes. They brought in butter; they filled up a good size show case, and it looked excellent. One would naturally say to look at that butter through the show case, that it was very fine in every sense. There wasn't very much of it that was colored, though it looked a good market color, and it was attractive looking on the whole. I judged that butter and scored it, and there was just one lot of butter in that show case that had what we would call a desirable flavor. There were all sorts of flavors in those different samples of butter. Some of them were very nice looking butters, but when you came to taste of them it was different. I had a class of students studying dairying, and I showed them these butters. They began looking in the show cases, and it did look mighty attractive, but it made some of those young men and women mightily surprised when they came to taste some of that butter.

Professor Decker: In my discussion of the subject, I did not want to imply that good butter could not be made on the farm, because it can; but, as a usual thing, we do not have the equipments on the farm for making butter and managing it properly. It takes time. Perhaps, if you have the time to put into it, it is a good way to spend your time, but, as I said, this is a time of specializing, and I believe there is a big enough field for the farmer to specialize in selecting his cows and caring for them properly.

Mr. Burnside: Keep milk cows?

Professor Decker: Yes, keep milk cows, and get more out of the cows, and let the experts make the butter who study all these preliminaries of making the butter right and putting it up in the right packages, and in that way we will cut off this supply for process butter. They must get their supplies from somewhere, and when we get the people to making a quality of butter that will be too expensive to buy for process butter, we will put them out of business. It is a sad commentary on the quality of dairy butter when they can get such large quantities of it. The trouble is with the farmer. You have to begin right there. There will be a good enough market for the good article. Let's study and specialize along these lines. Perhaps there might be some changes in the creamery business. I expect to see the large separators largely done away with at the creameries and the hand separators come more into use, so the farmer will have the warm skim milk at the farm, and they won't be to the expense of taking that to the creamery and back again. The farmer will merely take his cream to the creamery, and the creamerymen will ripen that cream and make butter out of it. That is one of the lines along which we will specialize. Now, have I told the truth? If you don't believe it, I do.

A Voice: Yes, sir.

Mr. Knox: Yes, that is right.

The President: Mr. Decker, as you have been around among the farmers on the other side of the water, how have you been impressed with the difference in what you call farmer's butter there and farmer's butter here?

Professor Decker: Well, the most of the butter I saw in Europe, I think, was creamery butter. At least, in England. I got Danish butter there largely. I did see French butter. That is made by the dairy women in France, and that was of a very even quality. I understand the buyers are very strict in selecting it. I think this, that we can make as good butter in this country as they can there. We do not make as uniform butter as the Danes do.

The President: Take the dairy butter that was showed at the Royal show in England, and how do you compare it with the dairy butter shown in our American shows?

Professor Decker: I didn't see the Royal show; I wasn't there at that time. I think that the dairy shows ought to be educating the people up to a higher standard.

The President: Indiana is today a producer—large producer—of farm dairy butter. I believe our creameries in the last five years have lost ground rather than gained ground, and if I can judge from what I have been able to learn from correspondence and all, I believe our farm dairies have gained ground. I think more effort has been made and more separators have been bought in our State among the farmer dairymen than there has with the creamerymen, but there is a splendid field yet for improvement here that would make better prices for our products.

Professor Decker: Mr. Chairman, I was thinking about the number of cows here in Indiana. I don't remember exactly, but I think approximately some 700,000.

The President: Between 700,000 and 800,000.

Professor Decker: And the State of Wisconsin, that is recognized as a great dairy State, has not many more than that.

The President: They have grown up in Wisconsin.

Professor Decker: Well, they have increased. You have about sixty-five creameries in the State?

The Secretary: There are eighty of which I have heard. Sixty were running last year.

Professor Decker: In the State of Wisconsin they have 1,000 creameries and 1,500 cheese factories. They talk about the State of Minnesota being the bread and butter State. They turn out a great deal of flour there, but they have a less number of cows than they have in the State of Indiana; but they have something like 600 creameries and sixty cheese factories in the State of Minnesota. You see they are making a business of it and pushing it there. Why should Wisconsin and Iowa and Minnesota butter be shipped through Indiana to eastern points—eastern markets? The people of the eastern States, and the great cities in the east, and a good many of the exporters, are going west, and they own lots of creameries in these States. Why can't we make that butter just as well as the States west? Why shouldn't the dairy business prosper just as much in Ohio and Indiana as in those States further west? We can make as good an article. The only thing to do is to do it right, and we can make a great success of it.

The President: During the last five years the beef interest in this State has grown very largely, and today the Shorthorn cow is having her inning, and you know what Jersey cows are in Indiana. They can't be sold in most places for any sort of price. It is not a defect in the Jersey breed as much as it is the traders and cow jockeys bringing into this State a large number of cull Jerseys and selling them to farmers. While Wisconsin has a million dairy cattle, she is not to be mentioned in the same class with Indiana as a beef State; so, of course, we are not lacking in cattle in Indiana at all. I personally have been trying to keep track of our dairy development in this State. I have felt for the last two years that we were working under great difficulties, and that is the reason why I feel that every person that is interested in this subject should cast in his lot with this State Dairy Association, and try to make it as substantial and as useful as possible during this trying spell.

Mr. Drischel: Mr. Decker, what nationality are the people in Wisconsin, Minnesota and Iowa as compared with Indiana and Ohio? Are there many Germans up there? I know a creamery running from 1,800 to 2,000 pounds per day that is run by a German. Isn't that class of people more energetic in that line?

Professor Decker: Well, there are more Swedes in Minnesota, I believe. In Wisconsin, I think, there are a good many Germans. In the dairy districts there are Germans, and they push the dairy business, but there are other nationalities, also. For instance, there is a town of Eden. They call it the Garden of Eden, and it is inhabited by Irishmen; they are great dairymen.

Mr. Drischel: Do you think the Pennsylvania Dutch are more energetic in that than other people?

Professor Decker: Why should the German people be better dairymen than any other people?

Mr. Drischel: They have a love for the dairy business.

Professor Decker: Maybe it is worth dollars and cents to have a love for this business.

Mr. Drischel: They don't get discouraged.

A Voice: Isn't it more the man than the country?

Professor Decker: This man over here wants to know if it is not more the man than the country. There is nothing the matter with the country. The trouble is with the man. We want to find out what is ailing the man, that is all.

The President: I am going to ask a question. I believe it is a pretty good idea for us to be frank with one another, and, when we go away, to get something nearly as we can to the correct sentiment on questions; and so I want to ask those people who are here from a distance of five miles and further from Plainfield: How many of you feel that dairying in your community is growing and improving? Those of you who feel that way raise your hands. There are two persons. Now, how many of you think that dairying is going through a depression and not prospering as it should at the present time? Those of you who feel that way raise your hands. There are five. Leaving the question of high prices of feed out of account, it affects all classes of live stock, and in practically the same degree. I would like to ask Mr. Billingsley for his reason for this depression.

Mr. Billingsley: I don't know that I am prepared to answer this question. I think that as far as country butter is concerned, our creameries are making better butter and are standing at the head of the market, and consequently the price of country butter is less. Of course, there is a reason for this. As far as my experience goes, I don't suppose there is one out of ten farm dairies where they give any attention whatever to the smaller details of the business, that are so necessary for the production of an excellent quality of butter. For instance, I don't suppose there is more than one out of ten that would give any attention to the udder. That is, would go over it and see that it is clean before they would draw any milk from the cow. I do know that it is the custom among nearly all the milkers to go and set a bucket down and go to milking. All the uncleanliness attached to the udder will go into the pail, and when that becomes mixed in the fluid state there is no amount of straining can take it all out. This prevails all over the country. I am satisfied it is largely the want of education in the business.

The President: Mr. Knox, what is your reason for the situation?

Mr. Knox: Mr. President, I don't know that I am able to assign any special reason. The reasons to my mind are general. Of course, the high price of feed is one reason that it is depressed. Another reason is the inferior butter that is made and put on the market. Other reasons are the means that are used in artificially building up the products—as was expressed last night, in cream built up artificially. Cream is now made where there is no cream. It is supposed to be cream, but it is not cream. Another great trouble is the oleomargarine trade. The process butter trade has a great deal to do with the depression in the butter trade. The reasons are general. There are no special reasons why it should be depressed. Another reason is that the beef prices have been so high within the last five years that it has driven a great many men from the butter interests.

Mr. Drischel: One of the greatest depressions with the creameries and cheese factories of this State is, the farmers are getting in good circumstances. They are either going to the towns and cities, or they are retiring to a certain extent, and the tenants that are placed upon the farm are restricted to two or three cows. I can cite you an instance of a man owning several hundred acres of land where there is not a tenant that has more than four or five cows; and one of the causes of the depression is that the tenant does not have time to develop the herd, or have ample time to stay on the farm.

Mr. Burnside: Did you gentlemen ever think now that oleomargarine has more to do with the depression of the price of butter than anything else? You go into the market and the people will do one of two things. They will either buy first-class creamery butter or they will buy oleomargarine. Today, if you pass that Grout Bill or something like it, it will do more to boom the price of dairy products in this country than anything else. It has more to do than anything else, because people would rather eat oleomargarine than poor butter.

The President: I will give you a receipt that will do more to promote the dairy interests on the farms than anything else, and that is cleanliness. It is the hottest proposition that can be put against the Grout Bill, and if the farmers would pursue as heavy a campaign on cleanliness as they do on Congressmen and Representatives they would carry it.

The Secretary: I find, in visiting the dairy sections, one thing that has depressed the dairy interests and that is the extravagant and unreasonable prices that have been paid for creameries in this State. They can't pay the interest on the money invested. It is not the fault of the dairy business, but the fault of our business methods. I hope it will not be repeated in newer dairy sections. They are being started in the northern end of the State. Three new creameries have been built within the last year or so.

Professor Decker: Mr. Chairman—if I am not chipping in too much on the subject—there are promoters who have certain kinds of machinery that they want to sell; they promote the creamery in order to sell their machinery. They go into a community which don't know anything about the dairy business. Of course, they tell them their machinery is the best on the market, and somehow it does not occur to the people to look elsewhere for machinery, or see whether they are paying too much for it. Perhaps, if they would investigate a little, they would find that there are plenty of people in the dairy supply business that have good machinery at reliable prices. In that way a factory can be built and equipped for less money than perhaps the promoter asks for it, and it will be a successful creamery.

The President: There is not a creamery neighborhood in this State that the promoters have not worked dry.

The Secretary: There is one more thought we have not brought out—the value of dairying in maintaining the soil fertility. There is nothing that takes as little fertilizer from the soil as the dairy products. If you buy and feed some of those concentrated feeds, in addition to that grown, and return to the land the manure, you will put back more fertilizer than you take off.

The President: I am going to give Mr. Billingsley a chance to say something.

Mr. Billingsley: I only have one question. I come along the street and see posted up in grocery stores: "Elgin creamery butter for 20 cents a pound." I would like to know how they sell it for that price.

Mr. Knox: I would like to find out what that is.

Mr. Schlosser: That is process butter, or oleomargarine, or something else.

Professor Erf: I think I know where that comes from. It comes from Indiana. There is an Indianapolis firm over at Champaign that gathers up all the old butter they can find, and ship it over to Indianapolis and make it into "Elgin butter."

The President: That is heaping it on too hard. We got it from Ohio yesterday.

Mr. Johnson: In Terre Haute, where I sell the most of my butter, they will go in and call for my butter and ask him what it is worth, and he would say 19 cents a pound, while other butter was 17 cents.

The President: Now, we will have a song by the Glee Club.

Song by Reform School Glee Club.

Convention adjourned until 1:30 o'clock this afternoon.

AFTERNOON SESSION.

December 19, 1:30 p. m.

The President: It was moved that we appoint a Legislative Committee. I have already canvassed the situation for the Legislative Committee, and I would like the motion made to have that committee consist of three persons, changed. I would like to have a reconsideration of that motion, and make it five instead of three. I believe it would be better.

Mr. Newsom: Mr. President, I move we reconsider that motion.

The President: It is moved that the motion passed yesterday, that we have a Legislative Committee consisting of three persons, be reconsidered. Those in favor of reconsidering that motion say "Aye." (Motion carried.)

Mr. Newsom: I move to amend that motion by striking out the word "three" and inserting the word "five."

The President: The motion is to amend by striking out the word "three" and inserting the word "five" in its place. Those in favor of that amendment say "Aye." (Motion carried.) I will now present the amended motion. Those in favor of having the Legislative Committee consist of five persons say "Aye." (Motion carried.) With that understanding, I will appoint a committee consisting of Mr. Burnside, of Liberty, for chairman; and Messrs. G. P. Newsom, Frank Johnson, G. W. Drischel and J. J. Billingsley. That is a Committee that is so constituted that it is made up of men, all of whom have shown a great deal of interest in the work of this Association, and some of these men have already promised me that if they were appointed on this Committee that they would look after the interests of the Association; and, furthermore, it is so constituted that if you find it necessary to take notice of political parties in the State, that the two great parties will have representation on this Committee in asking favors of the Legislature.

First, I will call for the report of the Auditing Committee. Is the Chairman of that Committee here—Mr. Schlosser? Does anybody know whether he has left town or is in town?

The Secretary: I think Mr. Schlosser left on the noon train.

The President: Mr. Newsom is here.

Mr. Newsom: I believe we find the Treasurer's accounts all right, with the exception of an error of 20 cents.

The President: And you recommend that the report be accepted as corrected?

Mr. Newsom: Yes, sir.

Report of Auditing Committee accepted.

The President: The next committee I will call upon to report is the Committee on Resolutions. Mr. Newsom is Chairman of that Committee.

RESOLUTIONS.

Whereas, Oleomargarine is now made in the color and semblance of butter, and in parcels and packages the same, and sold as butter;

Whereas, The State pure food law has been evaded and set at naught; that we, the members of the State Dairy Association, urge the passage of the oleomargarine bill in the present Congress.

Resolved, That a copy of this resolution be forwarded to each Senator and Representative in Congress from Indiana, and the same be printed in the report of proceedings of this, our Twelfth Annual Convention.

Whereas, There are on the statute books of the State of Indiana the best pure food laws in the United States; and,

Whereas, The enforcement of these laws is of the utmost importance to the public health; and,

Whereas, There is now no adequate means of enforcing these laws, be it

Resolved, That it is the sense of this Association that the State Legislature should appropriate such a sum of money as shall be necessary to enforce such laws, and that the enforcement of such laws shall be under the supervision of the State Board of Health.

Whereas, The State has greatly increased the appropriation for farmers' institutes; therefore, be it

Resolved, That it is the sense of this Convention that a certain part of this extra appropriation be used to hold not less than four special dairy institutes in various parts of the State each year.

Resolved, That agriculture is a science, and it is the wish of this Association that it be taught in our public schools.

Whereas, The dairy interests of this State is of such vast importance, and the State Dairy Association is such a prominent factor in placing the dairy interests on an intelligent basis,

Resolved, That we ask the State Legislature, as a matter of justice, to appropriate a sufficient sum of money to pay the necessary expenses of this Association from year to year.

Resolved, That the thanks of this Association are due and are hereby tendered to the officers of this Association for their faithful and efficient management of the association.

Resolved, That this Association unanimously endorse Mr. E. Sudendorf for the position of superintendent of the dairy department of the St. Louis World's Fair, 1904, and we earnestly recommend his appointment.

Resolved, That this Association highly appreciates the efforts put forth by the people of Plainfield for our entertainment, and we especially extend a vote of thanks to the Reform School Band, the Reform School Glee Club, Mrs. J. C. Reeder, Rev. E. C. Wareing, Miss Mayme Snipes, Mrs. E. B. Webb, Miss Rena Stanley, Miss Black and Mr. Webb for their excellent musical festival.

G. P. NEWSOM, Chairman.
T. C. BURNSIDE.
G. W. DRISCHEL.
E. E. HENLEY.
E. MARTIN.

The President: You have heard the report of this Committee on Resolutions. How do you wish to consider it? It will be in order to either consider the report of this committee by separate resolutions or as a whole. What is your wish?

Mr. Barrett: We might give a few moments for any discussion on the resolutions, and if there are no objections, then pass the resolutions as a whole.

Mr. Newsom: Mr. President, I move that the resolutions be adopted.

The President: Do you wish to qualify that as to how they should be adopted?

Mr. Newsom: I move that the resolutions be adopted as a whole.

(Motion seconded.)

Mr. Newsom: I don't make that motion because the thing should be rushed through or anything of that kind. I made that so they would be brought before the assembly, and, further than that, I do not want to dictate the will of the Association at all. If there is any part of them you want changed, say so.

The President: I would like to suggest, or rather ask, if the Committee considered the advisability of mentioning the name of the introducer of the Oleomargarine Bill in Congress. You state the "Oleomargarine Bill in Congress," but that is not as specific as to specify the Grout Bill or any other bill.

Mr. Newsom: Mr. President, that matter was brought up in the Committee, and the Committee decided that inasmuch as the bill had been changed, its name might be changed. The thing this Association wants is an oleomargarine bill that will be sufficient, whether it bears the name of Mr. Grout or some one else; the thing we want is a bill that will be sufficient. If the members in Congress see fit to change the name, then we still want to uphold the best bill. If we upheld the Grout Bill, and another better one would be introduced, we do not want to be pledged to the Grout Bill.

The President: Has anybody any amendments to make to the resolutions as offered? If there is no further discussion, I will put the motion.

(Motion carried, and resolutions adopted.)

The President: The next Committee that is to report is the Committee on Nominations, and Mr. Shugart is the Chairman of that Committee.

REPORT OF COMMITTEE ON NOMINATIONS.

For President, C. S. Plumb; for Vice-President, J. M. Knox; for Secretary and Treasurer, H. E. Van Norman; for Executive Committee, C. S. Plumb, H. E. Van Norman, J. M. Knox, Samuel Schlosser, A. J. Newsom.

J. V. SHUGART, Chairman,
J. M. T. WELBORN,
SAMUEL SCHLOSSER,
J. M. KNOX,
PERRY L. JOHNSON.

The President: I would like to make a statement in connection with this nomination of officers. For a number of years, I have had charge of the instruction in dairying at Purdue University, but recognizing the fact that it was a very important State industry, I used my influence to place the working dairy at Purdue University in the hands of one individual; and, as I had an abundance of other work, it resulted in the University placing the development of the dairy work in the hands of one person, who is now to give his entire time to that subject. As I superintend the work of the Experiment Station, and am not officially giving instruction or carrying on work in dairying, I feel that it is not the proper thing for me to act in any official capacity in connection with this Association, although I have a life membership, and shall always take a great interest in its prosperity. It was contemplated to have the present meeting at Lafayette, but other persons and myself thought it would be wise to wait another year and have the next annual meeting of the State Dairy Association at Purdue, when the new Agricultural Building would be completed, and there would be considerable attractions for the members of this Association and its friends. I have no ambition whatever to be President of this Association any more, but it might be there would be some advantages with me in this office if the meeting were held at Purdue, and I have consented to allow my name to be placed before you in nomination for President with the understanding that the next annual meeting will be held at Lafayette. While I would not want to have it understood that I am throwing any alternatives down to you, I make this explanation in order that you may understand why I am consenting to allow my name to be used as President. I have been identified with this Association since its beginning, and have always tried to be of service to it, and have held office already more than I ought to.

You have heard the report of the Committee on Nominations, what is your pleasure?

The President: The report of the Committee is accepted, and officers elected as named in the report of the Committee.

The President: Are there any other committees, or is there any other business? It will be in order to receive any invitations to the State Dairy Association to hold its annual meeting at any point in the State. It is customary for us to give opportunity to delegates or persons from any part of the State to issue invitations to the State Dairy Association, and the Executive Committee always takes notice of these invitations.

The Secretary: Mr. Chairman, on behalf of the city of Lafayette and Purdue University, I invite the State Dairy Association to hold its next annual meeting at Lafayette.

The President: Are there any other invitations? We will give everybody a chance.

Mr. Newsom: Mr. President, if that is the only invitation we have, I move we accept.

Mr. Billingsley: I suggest this, that it be Purdue University. Lafayette is one thing and Purdue University is another thing. I would like a second to the motion to amend it a little—that we select Purdue as the place for our next meeting, and the time of the meeting be referred to the Executive Committee.

(Motion carried.)

The President: I don't know that there will be any better opportunity to say that in holding the next meeting of the State Dairy Association at Purdue University, Lafayette, I will assure you that you will be given an opportunity of attending one of the best meetings in the history of the Indiana State Dairy Association. Both the Secretary and myself being located there, we will use every effort with the Executive Committee to make the attendance satisfactory; to have a class of lectures and entertainments of the very highest and most profitable sort, in view of the fact that we shall have completed and in working operation the new Agricultural Building at Purdue, and in the basement of which will be one of the best equipped and arranged dairy schools in the United States; and I am not making extravagant statements when I say this. I think you will find attractions there that will satisfy the people in coming to Lafayette at that time from any part of the State, so I hope all of you will consider that I have given each of you now a personal invitation to be our guest at the time of our annual meeting. I think it would be a wise plan if possible to hold it a little later, early in the next year after the students are all at work and the dairy is in operation so that you can see a feature of it that could not be shown if it was in December, before the term opens. The question is asked whether it would not be a good idea to get the judgment of those present whether it would be wise to hold the meeting in January instead of December. That would call for skipping over the entire year of 1902. It would really mean two annual meetings in one year, one early in 1903 and the other late in 1903. Those of you that are in favor of holding the meeting in January, so as to take advantage of the work at the University, raise your hands. (Almost unanimous.) The feeling seems to be in favor of the January meeting. I don't know that it makes any particular difference whether we hold two meetings eleven months apart or thirteen months apart.

In view of the fact that we have quite a number of people who came here to hear the papers, and as we have given some time to business, we will take up the program if there be no objection.

The first subject on the program is "Dairying as an Occupation for Women," by Mrs. Gregg, but she is not present.

The Secretary: Mr. President, I received a telegram from Mr. Coleman saying his train was late, and he missed connection at Indianapolis, and he could not arrive here until this afternoon, and so it was useless to come.

The President: Mrs. Lamont is here, and we will hear from her. Mrs. Lamont has been very successful for a number of years in winning premiums, both in the State Dairy Association and also the State Fair at Indianapolis, and we will all be gratified to hear what she has to say on this subject.

HOW I MADE MY PREMIUM DAIRY BUTTER.

MRS. CHARLES LAMONT, JOPPA.

Four years ago an exhibit of butter made by us was sent to the annual meeting of this Association. As that was the first time we had ever shown butter, it naturally scored rather low, but, instead of being discouraged by our failure, we made up our minds to do better another time, and by using better methods and by constant practice we have since met with some degree of success until this time, though we find we have much to learn yet; in fact, we are just beginning to find out how much we have to learn.

Before we made our last butter for exhibition, we were careful to see that the cows were getting the right kind of feed, were kept clean and their udders well wiped with a damp cloth before every milking. We then took a sample of each cow's milk and carefully examined it, with the result that one cow was put dry. We usually leave out all strippers at such a time; but as we have only two cows that were newly calved (our dairy being small) that could not be done this time. About three days before required for use, the starter was prepared. This was done by having some of the milk of a fresh cow strained into a clean, scalded glass fruit jar (one kept for the purpose), thoroughly aired and cooled to 50 degrees. It was afterwards warmed to 80 degrees, the lid fastened on, and kept at that temperature until it thickened, when it was set away under cold water until it was needed. The cream intended for butter, when separated, was at once set in cold water, well stirred to get rid of the animal odor, and cooled to 50 degrees, then put away in a tank of cold water until the cream from the next milking was also cooled and added to it.

We had the cream test about two and one-half pounds of butter to the gallon, just thick enough to churn readily, and not so thick as to stick to the sides of the churn.

The following night, when enough had been obtained for a churning, the cream was warmed to 70 degrees in water not exceeding 110 degrees. I then removed the cream that had risen to the top of the starter, shook well the thickened milk beneath and strained it into the cream, in proportion about one pint to ten gallons of cream. The cream was then closely covered and left until it ripened, which took about twelve hours. I was careful to notice just when it began to turn thick and had it cooled to 56 degrees, the churning temperature, as soon as possible, and kept at that point for about two hours, frequently stirring it to make sure of it all being cooled alike and thus help secure a clean churning and butter with a good grain.

The cream when ready for the churn was slightly sour, and on being stirred with the paddle stuck evenly all over it, not running off in streaks as cream insufficiently ripened would do.

In the meantime I had scalded and cooled the churn to insure its being perfectly clean, and the cream was poured in, coloring put in to suit the eye, and churning begun.

The butter came in small granules, somewhat less than wheat kernels, in about thirty minutes, and a small handful of salt was added to help it float on the buttermilk. The churn was then given a turn or two more and the buttermilk strained off. The butter was washed twice in water at 50 degrees, about one quart of water to a pound of butter, and well drained. The worker, butter mold and ladle having been scalded and cooled, the butter was lifted out of the churn and weighed, then put on the worker and salted one ounce to the pound.

The salt was thoroughly mixed through the fine grains with the ladle, and the butter just worked enough to bring it to a smooth, compact mass and press out most of the water.

To know when it was sufficiently worked, I relied most on breaking off a piece of the butter and observing the broken edges, which should resemble quite closely a bit of fractured steel.

The butter was then molded, wrapped in parchment paper and packed away from all harmful influences.

On three things I consider depend success in butter making. They are cleanliness, regard to temperature and doing the very best one knows.

Mr. Newsom: I would like to ask Mrs. Lamont whether she uses a commercial starter?

Mrs. Lamont: I use fresh cow's milk from a fresh cow.

The President: How many of the ladies have contributed butter to the Indianapolis exhibits and State Fair? Anybody besides Mrs. Lamont? Two. Can you add anything to what Mrs. Lamont has said?

Mrs. Shaw: I was unfortunate in not hearing it.

The President: If there is nothing further on this subject or questions to be asked of Mrs. Lamont, we will listen to Professor Erf, on "Handling and Care of Milk."

Professor Erf: Mr. President, Ladies and Gentlemen—I feel that I have been greatly benefited by attending this Convention. I think it is one of the most successful meetings I ever attended. I don't think the success of the meeting depends on the size of the crowd. I think the success depends entirely upon the discussion and the interest that is taken in the meeting. We certainly have that here.

I was over in Iowa not long ago, and they had a very large meeting there, but there wasn't any interest taken in the dairy discussion.

Before starting with the paper, I want to say that the care of milk depends largely upon the bacteriology of milk. It is a bacteriological subject. This subject has been treated very fully by Professor Dennis last night, and you have seen some of the lantern slides. I have some of the charts here that represent identically the same thing, or some process of the same kind as you saw last night.

THE HANDLING AND CARE OF MILK.

PROFESSOR OSCAR ERF, UNIVERSITY OF ILLINOIS.

Some one has said: "The dinner has been the potent force of American progress." If this is true, the dairyman ought to do all in his power to stimulate this progress by furnishing a good, wholesome supply of dairy products. Of course, naturally, we must begin the improvement with the milk.

You doubtless know that the great problem that is confronting the Board of Health Commissioners of our large cities today is the question of pure milk supply. The fraudulent methods that are resorted to by some of our dealers and dairymen, with the extravagant use of preservatives to cover up their filthy manner of handling milk, renders it almost dangerous and unfit for human consumption. It is impossible for butter and cheese-makers to make a good product out of preserved or embalmed milk, and sooner or later wherever this material is used it injures the dairy business. I, therefore, believe it to be every dairyman's duty to protest against the use of preservatives in milk, and to join with the public in securing legislation that will subjugate this disreputable practice. I sometimes think that too much is said about tainted milk and too little about tainted men.

The care of milk for the supply of butter and cheese stands first in importance in the matter of producing a fine product, for certainly without pure, untainted milk to begin with we can not have a fine quality of cheese or butter. In years gone by, when dairymen kept fewer cows and these, during the dairy season, were fed nothing but the native grass and were milked in the open air, probably in some pasture or grassy spot, a much purer quality of milk was produced than is now delivered at the factories or shipped to the cities. Now, when the herds are larger and when the flow of milk is increased by various foods, some of which produce objectionable flavors, the dairyman must exercise greater care in producing milk. In its primitive state the milk of the cow was intended to nourish the young, and nature has made wise provisions for transferring the milk to serve its functions under the most sanitary conditions. Man is using it for different purposes, and as he deviates from these natural conditions there will be more to overcome and more vigilance needs to be exercised.

The first requisite is to have healthy cows that produce pure milk before we need to care for it. With reference to this allow me to digress and say a word in regard to the breeding of cows. Too many breeders have utterly neglected constitution or vitality in breeding these animals. Many have been bred to such a state that they have lost all vigor, have a sickly appearance and are readily susceptible to disease, rendering them unfit for the production of pure, wholesome milk. This condition of affairs exists especially among the Channel Island breeds, and I can not help but attribute this sacrifice of constitution to the desire to secure a wedge form. There is a need for a wedge form in a dairy animal, but I believe that constitution must not be lost sight of, for it is of greater importance. A wedge shape in a dairy animal is merely a means to an end; that is, a cow must have those portions of the body developed that aid in the production of milk. Therefore a cow must necessarily have a large udder and a frame that will be in proportion to receive such an udder, a large digestive capacity and a large respiratory apparatus. With these points summarized, a dairy cow must necessarily assume a wedge form as a part of the conditions for a large milk producer. There is no object in having a heavy fleshed back, broad shoulders or a thick neck on a dairy cow, for it requires that much more food to sustain these parts which otherwise could be utilized for milk. But, nevertheless, a cow must have constitution, enough vigor to resist disease and to stand the wear and tear that a cow is subject to. It is my opinion that if this point will be taken more into consideration in future breeding, it will, no doubt, at least partially eliminate the causes of so many tuberculous theories which have recently been advanced and are now staring in the eyes of every milk consumer.

The subjects of defects of milk considered from the standpoint of the milk producer or the factory patron may be treated under two heads:

First. Defects due to the absorption of odors existing in the air liberated from decomposing masses of manure or fermenting foods, the exhalation from the bodies of animals and then those volatile substances that are absorbed before milk is secreted when the animal has been fed such feeds as turnips, cabbage, rape, excessive amounts of rye, etc. It is a popular belief that milk will not absorb any of these odors if it is warmer than the surrounding air; moreover, that milk when warmer gives off its odors and only absorbs them when colder than the atmosphere; but, on the contrary, experiments prove to us that this belief is wrong. We find that volatile substances are readily absorbed when milk is cooling, and even when exposed only for a short time to air foul and tainted with obnoxious gas it may be sufficient to impregnate the milk so that it can be recognized hours afterwards. Hence, from these facts, and from everyday experience, if particular notice is taken, we see the importance of removing the milk from the odors of the stable as soon as it is milked.

Second. There are the defects produced by the presence of living micro-organisms. Before taking up the treatment of milk to avoid this class of defects, it may be helpful to enter into a discussion and explain a few fundamental principles that govern bacterial life, in order to make it comprehensive why milk should be treated in this manner. All animal and vegetable matter if exposed to air at ordinary temperature undergoes some change. These changes are familiar to all of us, and are known as fermentation, decomposition or decay. The most common change that occurs in milk is souring. The souring of milk is due to the action of minute organisms, known as germs or bacteria. These bacteria are so minute that they can be seen only by the aid of a powerful microscope.

Besides the ordinary souring of milk, there are many other changes that may take place, such as the ripening of cream, the curing of cheese, rancidity in butter, ropiness, blue or red milk and many other changes less common. In the case of milk these changes are called fermentation, because they are similar to the fermenting of cider or vinegar. The term includes, also, changes due to unorganized ferments, such as action of rennet and pepsin, besides those of bacteria. But since these unorganized ferments play such a small part in the case of milk we need not consider them. There are three essentials for the development of bacterial life that need to be mentioned. These are food, warmth and moisture. Darkness aids their development, but direct sunlight is fatal to such life. In a dairy we have all the conditions for growth. For the reason that milk is a complete and easily digested food for man, it likewise is a good medium for bacterial growth. They thrive within wide limits of temperature, but 90 deg. to 93 deg. F. seems to be the most favorable temperature for rapid development. At this point a large number are capable of reproducing themselves every twenty minutes. To illustrate, we estimate that at 93 deg. bacteria increase 200-fold, while at 55 deg F. only eight-fold. At 40 deg. they become inactive, but still retain life. The majority can even withstand freezing. From this we can gather the reason why it is necessary to keep milk at a temperature where bacterial life is inactive in order to prevent any radical change. Heat has the same effect as cold to a certain degree, however. At 212 deg. F., which is the boiling point, all germs except those that are in a spore form are destroyed. It is, therefore, of great necessity to subject all dairy utensils to a boiling temperature for at least ten minutes before they are really in a sanitary condition. All dairy utensils should be made of tin or like metal, with all joints smoothly flushed with solder to prevent crevices which serve as breeding places for bacteria.

Keep the cows in a stable by themselves. Ventilate, light and drain your stable well. Have the floors water tight and the walls of plain construction. Avoid all breeding places. Use no dusty or mouldy litter or feed, for such dust is heavily laden with germs. If feed is slightly dusty sprinkle it to prevent the dust from rising; and at no time feed dry or strong smelling feeds like silage just before milking. Feed liberally, using only good palatable feed stuffs. Give the cows plenty of fresh water and have salt accessible at all times. Keep cows in a comfortable condition, never allow them to be abused or exposed to storms, for a decrease not only in quantity, but also in quality, of milk will be the result.

Clean the entire body of the cow daily. Brush and wipe with a moist sponge the udder and surrounding part just before milking to prevent hair or filth from falling into the milk.

It is very important that the milker be clean in every respect. He should wash his hands thoroughly before milking, and wear a clean outer garment which should only be used for milking. Milk with dry hands. Discharge the man that can not milk in this way.

If any accident should occur by which a pail of milk should become dirty do not try to remedy it by straining, but reject the milk and rinse out the pail. It is impossible to strain out germs.

Strain, aerate and cool the milk down to 40 deg. immediately after milking, for reasons stated before. Special care should be taken to have the aeration done in pure air, as foul air will readily contaminate the milk.

All of these steps that I have mentioned are means to check or prevent bacterial growth in milk, and the steps must be compared with the links of a chain—if one is weak, the whole is impaired; so if the care of milk is neglected at any one of these steps the care taken at other times may be rendered useless.

The President: Now, we will take a few minutes for discussion. We have one more short paper, which will follow this one. Does anybody wish to ask Professor Erf any questions?

Mr. Billingsley: The Professor referred to the use of a small preservative in milk as not being injurious, as I understood him.

Professor Erf: Yes, sir.

Mr. Billingsley: The question is this: Would any amount of preservative which may be used to keep the milk from souring, to that extent impair its digestibility?

Professor Erf: It would not materially.

Mr. Billingsley: What do you mean by "materially?"

Professor Erf: I mean that by its use no one will be injured.

Mr. Billingsley: You mean realize any effect. After all, doesn't it just so far, I don't care how small amount, impair digestion? People are ignorant of what quantity to use in milk, and they are using something, the effects of which they are not familiar with at all, and now, then, who is to set the limit to this as to what quantity should be used?

Professor Erf: They ought not to use it at all.

Mr. Billingsley: Yes, that is right.

Professor Erf: That is what I brought out, but if I had said that this material renders milk absolutely indigestible, some experimenter might say: "We are using it, and we find this experiment does not hurt anything in small quantities." That is fact; I have given you the facts. Now, I don't want you to follow this method. You don't know how many of the dairymen do use it, and it is a hard matter to determine; but we want to get rid of the matter entirely.

Mr. Drischel: Under the circumstances, would you approve of a commercial starter in cream or let nature take its course?

The President: That is not a foreign substance.

Mr. Drischel: A good many of the butter-makers use a commercial starter. It is a foreign substance.

The President: No, it is really an ingredient of milk. A commercial starter is a preparation from milk. It is a bacteria, but not a harmful one.

Mr. Drischel: What would you call a common buttermilk starter?

The President: A man could not live without the aid of bacteria.

Professor Erf: I want to say that bacteria is not a substance. It is numerous lives. A starter is not an adulterant. A common buttermilk starter, is one that supplies the right kind of bacteria to the milk to ripen it.

Mr. Newsom: There is another feature of this that ought to be brought out, and that is with reference to the fact that we do not know who will use this milk, and if we put in the smallest quantity of preservative it would not hurt a well person; but if we took that milk to a sick person, the smallest quantity would hurt that sick person just so much, and that small amount, whatever it might be, might be the cause of death. I think there ought to be a law to keep it all out. I might take some of it, and it would not hurt me at all, but some person might take some of it, and they were sick, and it would hurt them.

Professor Erf: Mr. President, that is just the idea. Keep it out. More infants have died from the effects of poisoned milk than any other disease known. The digestibility of it depends on the strength of the milk. The statement made there is right. Science has shown that a small amount of it will not kill anybody, but we do not want it in at all. I know of some people in the cities today that are using this preserver. I was up in Chicago not long ago and a man told me he would not buy any more ice, for he had something better. He showed me what it was, and said that he put a small amount of it into the milk and it would stay sweet. I think people ought to be educated more in this regard.

The President: I think we understand each other. I did not understand while he was reading his paper that Professor Erf endorsed the use of these materials.

Professor Erf: I brought out that a small quantity did not hurt a person; that is the point.

The President: Now, we have one other short paper that the Secretary will read—that of Mr. Yoars, on

CHEESE PROBLEMS.

G. M. YOARS, AMBOY.

This subject was rather chosen for the writer to speak on, and would be quite a lengthy subject if I would follow out each branch of it, which would not be practicable to take up so much of your time here.

In the first place, it is not very hard to make good marketable cheese for our home or local markets here; that is, if you have good average milk and understand what they require. It is very nice to grow up with the business, and then when you get to the front you will understand it. However, you can learn more. But when the milk changes very suddenly, then you have something to contend with in the manufacturing of good cheese. The best thing I have to offer for this kind of milk, which we do not like to receive at the factory, but sometimes do, is a good starter added to it as soon as all of the milk is in the vat, something that is stronger than all the rest of the starters therein, and something that has the right kind of lactic acid germs in it, to predominate over the rest of the different kinds.

Do not warm up your milk until about all of it is in the vat. Then warm up faster than normal milk to about the same temperature as you usually heat. Then try it with your rennet test, so as to know what you may look for in the setting and heating of the vat of curd. Add an ounce or so more of rennet than usual to the 1,000 pounds of milk. Cut it a little finer than with normal milk, so as to expel the whey quicker. Draw off the greater part of the whey as soon as you have it at the proper temperature, which you usually employ, and, if anything, two or three degrees higher. Add at once several gallons of clean, warm water from 102 to 105 deg. to weaken the acid in the whey, so that you can get the proper cook before too much acid comes on the curd, and by this time you can have it pretty well under control. If it did not get too much the start of you, you can get a fair cheese that will pass most of the time with some of your trade.

In regard to starters, I like Hansen's Lactic Ferment best; although you can start sometimes with good fresh cow's milk. What you want is plenty of lactic acid germs, with nothing else mixed up with them, so that they will predominate over everything else.

The worst germs we have to overcome are the gassy germs through the summer. Another problem we have to contend with every spring, and suppose we notice it more on account of our location, and then making cheese the year through, is when these factories that close down in the early winter begin to start up in the spring. They have to find a customer for their cheese, and cut the price 2 or 3 cents per pound under you. They never bother us very much, except when the new cheese begins to start in the spring for about two months. They certainly can not realize much for their milk. We have known of times when they would lay their cheese down here in Indiana towns at 6½ cents. Several times have they offered our customers forty-pound cheese at 7 cents, and we would be trying to get 9 and 10 cents and cutting our price to do that. This is a problem I would like to hear from some one in regard thereto.

The President: Mr. Drischel, we will give you five or ten minutes on this subject before we adjourn.

Mr. Drischel: There is nothing I care to discuss there, Mr. President that would be of importance to the audience here.

The President: Does anybody wish to touch on any point in the paper? We will simply hold that paper among the others for publication without any discussion. Is there any unfinished business to come before this convention?

Mr. Drischel: Mr. President, I move that a committee of two be appointed by you to confer with the State Board of Agriculture in reference to an exhibit of dairy cattle and butter and cheese at the State Fair. I think that is one of the most important factors that this Association ought to encourage.

Mr. Knox: I second that motion.

Mr. Billingsley: I move that the President of this Association be one of that Committee.

Mr. Drischel: All right.

The President: I will appoint on that committee Mr. Drischel, and I think the Secretary of this Association would be a desirable person, because he will have a good deal of business during the State Fair with the Board of Agriculture. Mr. Drischel will be chairman of that Committee.

Mr. Newsom: Mr. President, in making out our resolutions there was one thing that was omitted, and that was mentioning the work of the Commercial Club. We came here at the invitation of the Commercial Club, and I wish to reconsider the motion, and have the Commercial Club mentioned.

(Motion carried to amend the resolution.)

Mr. Newsom: Mr. President, let it be stated that we highly appreciate the entertainment given by the people of Plainfield and its Commercial Club.

(Amendment adopted.)

The Secretary: I would like to add in there my appreciation of the efforts of the Secretary of that club, also of Mr. Barrett. They have done everything that was in their power. The only thing that has not been done was to get the farmers of this county in, and they could not do that, though they have tried.

The President: The President would gladly second the motion. Mr. Barrett, I observe, has been constantly in attendance at this meeting, and I have good evidence that he has worked diligently to make this meeting a success in more ways than one.

Mr. Newsom: Mr. President, I understand that is to be added to our resolution?

The President: No, that will not be added.

Mr. Newsom: I move that that be added.

The President: It seems to me that is entirely covered. I think Mr. Barrett and the other gentlemen acted as the agents of the Commercial Club.

Mr. Barrett: I am perfectly satisfied. I wish to say this: I guaranteed this Association twenty-five members, and I lack three of having that number, and I would like to get them. Those that feel that they can become members, I would like for them to do so.

The President: I will state that the annual report will say all the good things about Mr. Barrett that have been said.

Mr. Billingsley: I move that we adjourn.

Adjourned sine die.

REPORT TREASURER INDIANA STATE DAIRY ASSOCIATION.

Lafayette, Ind., December 17, 1901.

To the Officers and Members of the Indiana State Dairy Association:

I respectfully submit the following report:

RECEIPTS.

To balance on hand last report	$105 32
To sale of butter, 11 tubs, 230 lbs., at 24c	55 20
To De Laval Separator Co. contribution to Hobart premium fund	15 00
To Boyd & Drischel for 50 reports	5 00
To contributions to 1901 premium fund—	
Diamond Crystal Salt Co	15 00
Worcester Salt Co	10 00
De Laval Separator Co	15 00
Elgin Butter Tub Co	5 00
Heller & Merz Co	15 00
Membership dues since last report	85 00
Total	$325 59

DISBURSEMENTS.

By M. A. Scovell—expenses as speaker at Hobart		$20 45
By Perry L. Johnson, premium	23 33	
By Dyer Creamery Co., premium	7 55	
By Silas Holloway, premium	6 88	
By H. F. Rotermund, premium	6 66	
By Deedsville Creamery, premium	5 33	
By Schlosser Bros., premium	4 45	
By Hagerstown Creamery, premium	4 45	
By J. F. Penrod, premium	3 55	
By Schlosser Bros., premium	2 22	
By Mondamin Meadows Creamery, premium	1 33	
By Herbert Newby, premium	90	
By Boyd & Drischel	10 00	
By Mrs. Charles Lamont	5 95	
Total		$82 60

Feb. 5.	X. A. Boomhawer, stenographic report of last meeting	$27 00
Mar. 1.	H. E. Van Norman, secretary's expenses to Hobart meeting, including railroad, hotel, telegrams, express on butter, telephone	18 82
Mar. 4.	T. F. Gallagher, expense as judge	5 00
Mar. 8.	Realty Publishing Co., 1,000 letterheads	2 25
May 23.	W. B. Burford, 1,000 copies tenth report	40 95
Aug. 15.	E. Griggs, proof-reading, mailing reports	1 15
Sept. 21.	W. B. Burford, 1,000 copies eleventh report	31 75
Oct. 7.	Mrs. J. C. Erwin, railroad fare to meeting	1 50
Oct. 11.	H. E. Van Norman, expense to Plainfield	4 90
Oct. 18.	Orange Judd Co., book for D. Dennis	1 60
Year's postage		11 61
Telephone and express		1 75
Home Journal Co., programs and badges		8 60
By total disbursements		$259 93
In bank		59 96
Cash on hand		5 63
Total		$325 52
To receipts		325 52

H. E. VAN NORMAN,
Secretary-Treasurer.

The foregoing report, audited by the undersigned committee, is found correct.

SAMUEL SCHLOSSER.
A. J. NEWSOM.

December 18, 1901.

CREAMERY BUTTER—ENTRIES AND SCORES, PLAINFIELD, DECEMBER 18–19, 1901.

SCORED BY PROF. J. W. DECKER, OHIO STATE UNIVERSITY, AND PROF. OSCAR ERF, UNIVERSITY OF ILLINOIS.

(Premiums distributed pro rata to all scoring 90 or over.)

No.	NAME OF EXHIBITOR.		ADDRESS.	Flavor 50	Grain 25	Color 10	Salt 10	Pkg. 5	Total 100
5	Herbert Newby	2, 10, 5	Spiceland	46	25	10	9.5	5	95.5
1	Earl Martin	3, 11, 9	New Carlisle	48	23	10	9.5	4.9	95.4
4	Perry L. Johnson	3, 11, 6	Prairie Creek	45	24	9.5	9.5	5	93
2	C. W. Lisman	1, 12, 5	Carlisle	47	22	9	10	5	93
7	C. E. Holderman	2, 10, 4	Bremen	47	23	9	9.5	4	92.5
8	J. F. Penrod	2, 10, 4	Plymouth	45	22	9	8	5	89
3	O. R. Werking	2, 11, 7	Hagerstown	45	20	5	10	4	84
6	John Breuscher	2, 10, 4	Dyer	35	20	10	10	5	80

FARM DAIRY BUTTER.

No.	NAME OF EXHIBITOR.		ADDRESS.	Flavor 50	Grain 25	Color 10	Salt 10	Pkg. 5	Total 100
5	Mrs. E. J. Shaw	14, 10, 8	Plainfield	47	24	10	10	3	94
4	C. W. Kratz	13, 10, 7	Evansville	45	24	10	10	5	93
3	Mrs. N. E. Parsons	3, 10, 4	Plainfield	42	24	9.5	9.5	5	90
1	Mrs. Chas Lamont	1, 11, 4	Joppa	40	22	9	9	5	85
6	Arthur Blair	13, .., 8	Bridgeport	46	23	9	8	2	88
2	Miss Edith Parsons	3, 10, 4	Plainfield	40	19	10	9	5	83

CHEESE.

No.	NAME OF EXHIBITOR.		ADDRESS.	Flavor 30	Quality 30	Text're 20	Color 10	Salt 10	Total 100
1	Boyd & Drischel	2	Cambridge City	27	25	18	10	10	90
3	Perry L. Johnson	3	Prairie Creek	24	25	15	10	7	81
2	E. E. Henley	1	Straughn	20	27	15	10	8	80

1. Genessee Salt.
2. Worcester Salt.
3. Diamond Crystal Salt.
4. DeLaval Separator.
5. Russian Separator.
6. Sharpless Tubular Separator.
7. United States Separator.
8. Gravity System.
9. Danish Weston.
10. Wells-Richardson Color.
11. Alderney Color.
12. Hansen Columbia Color.
13. Star Salt.
14. Q and Q. Salt.

APPENDIX.

BUTTER ENTRIES AND SCORES.

Indiana State Fair, September 16 to 21, 1901.

CREAMERY BUTTER—THIRTY-POUND TUB.

Entry No.	*Name.*	*Postoffice.*	*Score.*	*Prize.*
1603.	Spiceland Creamery	Spiceland	97.5	First premium.
1603.	Spiceland Creamery	Spiceland	97	Second premium.
727.	Perry L. Johnson	Prairie Creek	96.5	Third premium.
727.	Perry L. Johnson	Prairie Creek	96	Fourth premium.
727.	Perry L. Johnson	Prairie Creek	96	
603.	W. S. Hastings	Sullivan	95	
603.	W. S. Hastings	Sullivan	94.5	
603.	W. S. Hastings	Sullivan	94	
1603.	Spiceland Creamery	Spiceland	93.5	

DAIRY BUTTER—FIFTEEN-POUND TUB.

1454.	Peter Raab	Malott Park	97	First premium.
88.	W. G. Bradford	Marion	96.5	Second premium
1454.	Peter Raab	Malott Park	95.5	Third premium.
256.	Mrs. Jerome Dunlap	Lafayette	95	Fourth premium.
189.	Mrs. Betty Clore	Bargersville	94	
94.	Mrs. Herman Barlow	Greenwood	93.5	
1457.	Wm. J. Raab	Cumberland	93	

DAIRY BUTTER—FIVE POUNDS IN PRINTS.

893.	Mrs. Chas. Lamont	Joppa	98	First premium.
127.	C. B. Benjamin	LeRoy	97	Second premium.
88.	W. G. Bradford	Marion	96.5	Third premium.
1124.	Ada A. Norwood	Southport	96.5	Fourth premium.
1454.	Peter Raab	Malott Park	96	
1457.	W. J. Raab	Cumberland	95.5	
979.	Meadowbrook Farm	Noblesville	95.5	
247.	Jennie H. Drake	Beech Grove	95	
256.	Mrs. Jerome Dunlap	Lafayette	94	
488.	Nanna Groveclose	Indianapolis	92.5	

COTTAGE CHEESE.

Entry No.	Name.	Postoffice.	Prize.
94.	Mrs. Herman Barlow	Greenwood	First premium.
189.	Mrs. Betty Clore	Bargerville	Second premium.
1124.	Ada A. Norwood	Southport	Third premium.
247.	Jennie H. Drake	Beech Grove.	
488.	Nanna Groveclose	Indianapolis.	
574.	Mrs. L. B. Hoover	Indianapolis.	
413.	Mrs. J. M. Flick	Lawrence.	
256.	Mrs. Jerome Dunlap	Lafayette.	

CHEDDAR CHEESE.

Entry No.	Name.	Postoffice.	Score.	Prize.
563.	A. E. Helmer	Evansville, N. Y	98	First premium.
1050.	McCain & Co	Hortonville	96	Second premium.
1050.	McCain & Co	Hortonville	95	Third premium.
1042.	W. L. McCain	Hortonville	94	Fourth premium.
91.	Boyd & Drischel	Cambridge City	93	
567.	E. E. Henley	Straughn	92	

NATIONAL OLEOMARGARINE LAWS.

[PUBLIC—NO. 110.]

An Act to make oleomargarine and other imitation dairy products subject to the laws of any State, or Territory or the District of Columbia into which they are transported, and to change the tax on oleomargarine, and to impose a tax, provide for the inspection, and regulate the manufacture and sale of certain dairy products, and to amend an Act entitled "An Act defining butter, also imposing a tax upon and regulating the manufacture, sale, importation, and exportation of oleomargarine," approved August second, eighteen hundred and eighty-six.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all articles known as oleomargarine, butterine, imitation, process, renovated, or adulterated butter, or imitation cheese, or any substance in the semblance of butter or cheese not the usual product of the dairy and not made exclusively of pure and unadulterated milk or cream, transported into any State or Territory or the District of Columbia, and remaining therein for use, consumption, sale, or storage therein, shall, upon the arrival within the limits of such State or Territory or the District of Columbia, be subject to the operation and effect of the laws of such State or Territory or the District of Columbia, enacted in the exercise of its police powers to the same extent and in the same manner as though such articles or substances had been produced in such State or Territory or the District of Columbia, and shall not be exempt therefrom by reason of being introduced therein in original packages or otherwise.

Sec. 2. That the first clause of section three of an Act entitled "An Act defining butter, also imposing a tax upon and regulating the manufacture, sale, importation, and exportation of oleomargarine, approved August second, eighteen hundred and eighty-six, be amended by adding thereto after the word "oleomargarine," at the end of said clause, the following words:

"And any person that sells, vends, or furnishes oleomargarine for the use and consumption of others, except to his own family table without compensation, who shall add to or mix with such oleomargarine any artificial coloration that causes it to look like butter of any shade of yellow shall also be held to be a manufacturer of oleomargarine within the meaning of said Act, and subject to the provisions thereof."

Section three of said Act is hereby amended by adding thereto the following: "Provided further, That wholesale dealers who vend no other oleomargarine or butterine except that upon which a tax of one-fourth of one per cent. per pound is imposed by this Act, as amended, shall pay two hundred dollars; and such retail dealers as vend no other oleomargarine or butterine except that upon which is imposed by this Act, as amended, a tax of one-fourth of one cent per pound shall pay six dollars."

Sec. 3. That section eight of an Act entitled "An Act defining butter, also imposing a tax upon and regulating the manufacture, sale, importation, and exportation of oleomargarine," approved August second, eighteen hundred and eighty-six, be, and the same is hereby amended so as to read as follows:

"Section 8. That upon oleomargarine which shall be manufactured and sold, or removed for consumption or use, there shall be assessed and collected a tax of ten cents per pound, to be paid by the manufacturer thereof; and any fractional part of a pound in a package shall be taxed as a pound: Provided, When oleomargarine is free from artificial coloration that causes it to look like butter of any shade of yellow said tax shall be one-fourth of one cent per pound. The tax levied by this section shall be represented by coupon stamps; and the provisions of existing laws governing the engraving, issue, sale, accountability, effacement, and destruction of stamps relating to tobacco and snuff, as far as applicable, are hereby made to apply to stamps provided for by this section."

Sec. 4. That for the purpose of this Act "butter" is hereby defined to mean an article of food as defined in "An act defining butter, also imposing a tax upon and regulating the manufacture, sale, importation, and exportation of oleomargarine," approved August second, eighteen hundred and eighty-six; that "adulterated butter" is hereby defined to mean a grade of butter produced by mixing, reworking, rechurning in milk or cream, refining, or in any way producing a uniform, purified, or improved product from different lots or parcels of melted or unmelted butter or butter fat, in which any acid, alkali, chemical, or any substance whatever is introduced or used for the purpose or with the effect of deodorizing or removing therefrom rancidity, or any butter or butter fat with which there is mixed any substance foreign to butter as herein defined, with intent or effect of cheapening in cost the product, or any butter in the manufacture or manipulation of which any process or material is used with intent or effect of causing the absorption of abnormal quantities of water, milk, or cream; that "process butter" or "renovated butter" is hereby defined to mean butter which has been subjected to any process by which it is melted, clarified or refined and made to resemble genuine butter, always excepting "adulterated butter" as defined by this Act.

That special taxes are imposed as follows:

Manufacturers of process or renovated butter shall pay fifty dollars per year and manufacturers of adulterated butter shall pay six hundred dollars per year. Every person who engages in the production of process or renovated butter or adulterated butter as a business shall be considered to be a manufacturer thereof.

Wholesale dealers in adulterated butter shall pay a tax of four hundred and eighty dollars per annum, and retail dealers in adulterated butter shall pay a tax of forty-eight dollars per annum. Every person who sells adulterated butter in less quantities than ten pounds at one time shall be regarded as a retail dealer in adulterated butter.

Every person who sells adulterated butter shall be regarded as a dealer in adulterated butter. And sections thirty-two hundred and thirty-two, thirty-two hundred and thirty-three, thirty-two hundred and thirty-four, thirty-two hundred and thirty-five, thirty-two hundred and thirty-six, thirty-two hundred and thirty-seven, thirty-two hundred and thirty-eight, thirty-two hundred and thirty-nine, thirty-two hundred and forty, thirty-two hundred and forty-one, and thirty-two hundred and forty-three of the Revised Statutes of the United States are, so far as applicable, made to extend to and include and apply to the special taxes imposed by this section and to the person upon whom they are imposed.

That every person who carries on the business of a manufacturer of process or renovated butter or adulterated butter without having paid the special tax therefor, as required by law, shall, besides being liable to the payment of the tax, be fined not less than one thousand and not more than five thousand dollars; and every person who carries on the business of a dealer in adulterated butter without having paid the special tax therefor, as required by law, shall, besides being liable to the payment of the tax, be fined not less than fifty nor more than five hundred dollars for each offense.

That every manufacturer of process or renovated butter or adulterated butter shall file with the collector of internal revenue of the district in which his manufactory is located such notices, inventories, and bonds, shall keep such books and render such returns of material and products, shall put up such signs and affix such number of his factory, and conduct his business under such surveillance of officers and agents as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, may by regulation require. But the bond required of such manufacturer shall be with sureties satisfactory to the collector of internal revenue, and in a penal sum of not less than five hundred dollars; and the sum of said bond may be increased from time to time and additional sureties required at the discretion of the collector or under instructions of the Commissioner of Internal Revenue.

That all adulterated butter shall be packed by the manufacturer thereof in firkins, tubs, or other wooden packages not before used for that purpose, each containing not less than ten pounds, and marked, stamped, and branded as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall prescribe; and all sales made by manufacturers of adulterated butter shall be in original stamped packages.

Dealers in adulterated butter must sell only original or from original stamped packages, and when such original stamped packages are broken the adulterated butter sold from same shall be placed in suitable wooden or paper packages, which shall be marked and branded as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, shall prescribe. Every person who knowingly sells or offers for sale, or delivers or offers to deliver, any adulterated butter in any other form than in new wooden or paper packages as above described, or who packs in any package any adulterated butter in any manner contrary to law, or who falsely brands any package or affixes a stamp on any package denoting a less amount of tax than that required by law, shall be fined for each offense not more than one thousand dollars and be imprisoned not more than two years.

That every manufacturer of adulterated butter shall securely affix, by pasting, on each package containing adulterated butter manufactured by him a label on which shall be printed, besides the number of the manufactory and the district and State in which it is situated, these words: "Notice.—That the manufacturer of the adulterated butter herein contained has complied with all the requirements of law. Every person is cautioned not to use either this package again or the stamp thereon, nor to remove the contents of this package without destroying said stamp, under the penalty provided by law in such cases." Every manufacturer of adulterated butter who neglects to affix such label to any package containing adulterated butter made by him, or sold or offered for sale for or by him, and every person who removes any such label so affixed from any such package shall be fined fifty dollars for each package in respect to which such offense is committed.

That upon adulterated butter, when manufactured or sold or removed for consumption or use, there shall be assessed and collected a tax of ten cents per pound, to be paid by the manufacturer thereof, and any fractional part of a pound shall be taxed as a pound, and that upon process or renovated butter, when manufactured or sold or removed for consumption or use, there shall be assessed and collected a tax of one-fourth of one cent per pound, to be paid by the manufacturer thereof, and any fractional part of a pound shall be taxed as a pound. The tax to be levied by this section shall be represented by coupon stamps and the provisions of existing laws governing engraving, issuing, sale, acountability, effacement, and destruction of stamps relating to tobacco and snuff, as far as applicable, are hereby made to apply to the stamps provided by this section.

That the provisions of sections nine, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty, and twenty-one of "An Act defining butter, also imposing a tax upon and regulating the manufacture, sale, importation, and exportation of oleomargarine," approved August second, eighteen hundred and eighty-six, shall apply to manufacturers of "adulterated butter" to an extent necessary to enforce the marking, branding, identification and regulation of the exportation and importation of adulterated butter.

Sec. 5. All parts of an Act providing for an inspection of meats for exportation, approved August thirtieth, eighteen hundred and ninety, and of an Act to provide for the inspection of live cattle, hogs, and the carcasses and products thereof which are the subjects of interstate commerce, approved March third, eighteen hundred and ninety-one, and of amendment thereto, approved March second, eighteen hundred and ninety-five, which are applicable to the subjects and purposes described in this section shall apply to process or renovated butter. And the Secretary of Agriculture is hereby authorized and required to cause a rigid sanitary inspection to be made, at such times as he may deem proper or necessary, of all factories and storehouses where process or renovated butter is manufactured, packed, or prepared for market, and of the products thereof and materials going into the manufacture of the same. All process or renovated butter and the packages containing the same shall be marked with the words "Renovated Butter" or "Process Butter" and by such other marks, labels, or brands and in such manner as may be prescribed by the Secretary of Agriculture, and no process or renovated butter shall be shipped or transported from its place of manufacture into any other State or Territory or the District of Columbia, or to any foreign country, until it has been marked as provided in this section. The Secretary of Agriculture shall make all needful regulations for carrying this section into effect, and shall cause to be ascertained and reported from time to time the quantity and quality of process or renovated butter manufactured, and the character and the condition of the material from which it is made. And he shall also have power to ascertain whether or not materials used in the manufacture of said process or renovated butter are deleterious to health or unwholesome in the finished product, and in case such deleterious or unwholesome materials are found to be used in product intended for exportation or shipment into other States or in course of exportation or shipment he shall have power to confiscate the same. Any person, firm. or corporation violating any of the provisions of this section shall be deemed guilty of a misdemeanor and on conviction thereof shall be punished by a fine of not less than fifty dollars nor more than five hundred dollars or by imprisonment not less than one month nor more than six months, or by both said punishments, in the discretion of the court.

Sec. 6. That wholesale dealers in oleomargarine, process, renovated or adulterated butter shall keep such books and render such returns in relation thereto as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, may, by regulation, require; and such books shall be open at all times to the inspection of any internal revenue officer or agent. And any person who willfully violates any of the provisions of this section shall for each such offense be fined not less than fifty dollars and not exceeding five hundred dollars, and imprisoned not less than thirty days nor more than six months.

Sec. 7. This Act shall take effect on the first day of July, nineteen hundred and two.

Approved, May 9, 1902.

AMERICAN DAIRY JOURNALS.

The publishers of these journals will, no doubt, gladly send sample copies to those who may apply for them:

American Cheese Maker, Grand Rapids, Mich. Monthly.
Chicago Produce, Chicago, Ill. Weekly.
Creamery Gazette, Des Moines, Iowa. Monthly.
Creamery Journal, Waterloo, Iowa. Monthly.
Dairy and Creamery, Chicago, Ill. Semi-monthly.
Dairy and Produce Review, San Francisco, Cal. Weekly.
Dairy Age, Beloit, Kansas. Monthly.
Dairy World, Chicago, Ill. Monthly.
Elgin Dairy Report, Elgin, Ill. Weekly.
Hoard's Dairyman, Fort Atkinson, Wis. Weekly.
Jersey Advocate and Dairyman, New York City. Weekly.
Jersey Bulletin and Dairy Farmer, Indianapolis, Ind. Weekly.
Milk News, Chicago, Ill. Semi-monthly.
New York Produce Review and American Creamery, New York City. Weekly.
Practical Dairyman, Indianapolis, Ind. Monthly.
St. Paul Dairy Reporter, St. Paul, Minn. Weekly.

Note.—The National oleomargarine and the filled cheese laws are printed in full in the 1897 Report of the Dairy Association. The Indiana pure food law is printed in the 1898 Report of the Dairy Association.

The new, or amendments to the National Oleomargarine Laws are printed above.

REPORT

OF THE

State Veterinarian of Indiana.

Governor W. T. Durbin:

I herewith submit a summarized report of the office of State Veterinarian for the period from May 4 to October 30, as required by act of the General Assembly of the State of Indiana, and approved March 6, 1901.

The lines of work that may be pursued under this law are numerous but during the period just elapsed it has been limited to organization, to necessary police work and to the investigation of one disease. Having learned the probable demands for assistance for the determination and control of contagious diseases, it appears that considerable attention may be given to such investigational work as will be of far greater public benefit than that which may come from the police control proper. The research work will, therefore, be given the prominent place in the future.

Respectfully submitted,

A. W. BITTING,

LIVE STOCK SANITARY LAW.

CHAPTER LXIV.

AN ACT entitled an act to establish the office of State Veterinarian of Indiana, to provide for the appointment of the State Veterinarian by the Governor, and to provide for the control and suppression of dangerous, contagious and infectious diseases among domestic animals, making an appropriation for expenses of the same, and for the repeal of all laws or parts of laws conflicting herewith.

[S. 18. Approved March 6, 1901.]

Section 1. Be it enacted by the General Assembly of the State of Indiana, That an office is hereby established, to be known as the State Veterinarian of Indiana. The office of State Veterinarian of Indiana shall to be filled by appointment by the Governor; the person so appointed shall be a competent and qualified veterinarian of large experience, and shall be a graduate of a reputable veterinary college in the United States, Canada or Europe. The term of office of the State Veterinarian shall be four years, but he may be removed for cause.

Sec. 2. That it shall be the duty of the State Veterinarian to protect the health of the domestic animals of the State, and to determine the most efficient and practical means for the prevention, suppression, control and eradication of dangerous, contagious and infectious diseases, and to investigate the cause, nature, means of prevention and treatment of such diseases as he may deem advisable, and for these purposes he is hereby authorized and empowered to establish, maintain, enforce and regulate such quarantine and other measures relating to the movements and care of animals and their products, the disinfection of suspected localities and articles, and the destruction of such animals and property as he may deem necessary, and to adopt from time to time all such regulations as may be necessary and proper for the carrying out of the purposes of this act: Provided, however, That in the case of any slowly contagious disease, only suspected or diseased animals shall be quarantined.

Sec. 3. That when it shall be deemed necessary to kill any animal or animals, or to destroy any property to prevent further spread of disease, the State Veterinarian or his agent may adjust the claim with the owner or his agent: Provided, That the amount to be paid is less than twenty-five dollars; if the claim exceed twenty-five dollars, or an agreement can not be made with the owner or claimant for the amount thereof, three appraisers, who shall be freeholders in the county, shall be appointed, one by the State Veterinarian or his agent, one by the owner or claimant, and a third by the two appointed, as aforesaid, who shall under oath or affirmation appraise the animal, animals or property, taking into consideration their or its actual value at the time of appraisement, and such appraisement shall be paid in the same manner as other expenses under this act are provided for: Provided, That under such appraisement, not more than twenty-five dollars shall be paid for any infected animal: And provided further, the right to indemnity does not exist and the payment of such must not be made in the following cases:

For animals belonging to the United States;

For animals belonging to the State;

For animals brought into the State contrary to the rules and regulations of the State Veterinarian;

For animals found to be diseased, or that are destroyed because they have been exposed to disease before or at the time of their arrival in the State;

For an animal which was previously affected by any other disease, which from its nature and development was incurable and necessarily fatal;

For an animal which the owner knowingly or wittingly purchased affected with disease, or from a place where contagious disease was known to exist.

Sec. 4. That all sheep consigned to or passing through stockyards shall be dipped before leaving, if intended for any other purposes than immediate slaughter in the State, the time of dipping, the manner of dipping, and kind of dip used to be subject to the approval of the State Veterinarian: Provided, That in the winter at such times as the dipping of sheep would be hazardous to their health, the sheep may be withdrawn upon permit from the State Veterinarian, which permit shall be issued upon the written agreement of the owner that the sheep will remain in his possession, and that he will dip at such future time and in such manner as the State Veterinarian may direct. That all sheep found affected with scabies shall be dipped at such time and in such manner and with such dip, as the State Veterinarian shall direct, and at the expense of the owner.

Sec. 5. That the State Veterinarian or his authorized agent shall at any time have the right to enter any premises, farms, fields, pens, abattoirs, slaughterhouses, buildings, cars, or vessels, where any domestic animals are at the time quartered, or wherever the carcass of any one may be, for the purpose of examining it in any way that may be deemed necessary to determine whether they are or were the subjects of any contagious or infectious disease.

Sec. 6. That the State Veterinarian may accept in behalf of the State, the rules and regulations prepared and adopted by the Department of Agriculture of the United States, for the suppression of any contagious diseases among domestic animals, and shall co-operate with the authorities of the United States in the enforcement of such rules and regulations.

Sec. 7. That the Inspectors of the Bureau of Animal Industry shall have the same right of inspection, quarantine and condemnation of animals affected with any contagious or infectious disease or suspected to be so affected, or that may have been exposed to any such disease, and for such purposes they may enter upon any ground or premises, they may call upon the sheriffs, constables and other peace officers to assist them in the discharge of their duties, and such sheriffs, constables or peace officers shall assist such inspectors when so requested, and such inspectors shall have the same power and protection as peace officers, when engaged in the discharge of their duties: Provided, That this State shall not be liable for any damages or expenses caused or made by such inspectors.

Sec. 8. That whenever the Governor has good reasons to believe that any disease has become epidemic in another State or territory, and that the importation of animals from such State or territory would be prejudicial to the health of the domestic animals of this State, he must, by proclamation, designate such locality or localities, and prohibit the importation therefrom of any live stock of the kind diseased, except under such rules and regulations as the State Veterinarian shall prescribe.

Sec. 9. That any person knowing or suspecting a dangerous, contagious or infectious disease to exist among live stock shall report the same to the local health officer, who shall, within twenty-four hours, report the same to the State Veterinarian. The State Veterinarian or his agent shall visit the locality and make an examination of the suspected stock and prescribe and enforce such rules and regulations as may be necessary: Provided, That an owner of an animal or animals affected with a dangerous or contagious disease, shall report the same within forty-eight hours after knowing such to exist.

Sec. 10. The State Veterinarian shall, as far as possible, investigate such diseases of animals as are communicable to man, and such conditions of dairies as the State Board of Health may request.

Sec. 11. Any person or persons, any company or corporation, wilfully violating any of the provisions of this act, or any regulation or order of the State Veterinarian, or agent appointed by him, shall be deemed guilty of misdemeanor and shall, upon conviction, be punished by a fine not exceeding one hundred dollars, or by imprisonment not exceeding thirty days, or both, at the direction of the court.

Sec. 12. That the State Veterinarian is hereby empowered to appoint and employ such assistants or agents, and to purchase supplies and materials as may be necessary in carrying out the provisions of this act: Provided, That the sum expended for supplies and materials shall not exceed two hundred dollars in any one year. That the State Veterinarian or his duly appointed agents, are empowered to administer oaths or affirmations, that they may make such examinations into the conditions of the live stock of the State in relation to contagious and infectious diseases, including milk supplies of cities, towns and villages, as may seem necessary, and to take proper measures to protect such milk supplies from contamination. The decision of the State Veterinarian in all matters pertaining to diseases of domestic animals and his orders as to their disposition, shall be final. He may call upon any peace officer for assistance in the discharge of his duties, and such peace officer shall give assistance.

Sec. 13. That the State Veterinarian shall, from time to time, publish the rules and regulations pertaining to the control and suppression of dangerous, contagious and infectious diseases of domestic animals, and such regulations shall have the force and effect of laws of the State of Indiana. He shall make an annual report to the Governor of all work done and a statement of expenditures.

Sec. 14. That the Governor, Auditor of State and Treasurer of State shall constitute a committee to determine the salary of the State Veterinarian and to audit his accounts, and upon the certification by the Governor to the Auditor of State the amount due the State Veterinarian and assistants for salary and expenses, the Auditor shall draw his warrant upon the Treasurer for said amount in favor of the State Veterinarian and assistants respectively, payable out of the funds hereinafter appropriated; and upon further certification by the Governor to the Auditor of State of the amount due any person for animal or animals condemned or property destroyed, the Auditor shall draw his warrant upon the Treasurer for the amount so certified, payable out of the funds hereinafter appropriated: Provided, That said committee shall not receive additional compensation for said work: And further provided, That the salary of the State Veterinarian shall not exceed twelve hundred dollars and necessary traveling expenses in one year, and that not more than eight hundred dollars shall be allowed for assistants.

Sec. 15. That the sum of three thousand dollars is hereby appropriated annually for carrying out the provisions of this act.

Sec. 16. That an act entitled "An act to provide for a Live Stock Sanitary Commission and a State Veterinarian, and to prescribe their powers and duties; and to prevent and suppress contagious and infectious diseases among the live stock of the State, and to declare an emergency," approved March 9, 1889, and all other laws and parts of laws in conflict therewith, be and the same are hereby repealed.

RULES AND REGULATIONS.

As stock owners generally feel that they are entitled to compensation at full value for all animals condemned, no matter how badly diseased, or how nearly dead they may be at the time of condemnation, an opinion was sought from Attorney-General Taylor as to the proper basis of valuation in making an appraisement for damages. His opinion is as follows;

"Indianapolis, Ind., May 21.

"Dr. A. W. Bitting, Lafayette, Ind.:

"Dear Sir—I am in receipt of your favor of the 5th inst., making the inquiry:

"What is a proper basis for appraisal of animals. (1) When condemned as affected with contagious, or infectious and incurable disease? (2) When condemned as affected with contagious or infectious disease that may be curable, but in which case it is deemed expedient to slaughter for the better protection of other stock?

"Section 3 of the veterinary law provides a basis for payment of destroyed property. It leaves it in the hands of yourself or agents to adjust the claims with the owner or his agent. It limits the amount to be adjusted by you to $25 for each animal. If the claim is for more than that amount, then three appraisers shall be named. You and these appraisers are to be taken into consideration in the respective cases, the actual value at the time of appraisement—not what it was worth in the past, nor what was paid for it, but what it was actually worth at the time the animal was appraised.

"In no event shall more than $25 be paid for any animal. Then follows the classes of animals for which no payment is to be made:

"(1) Animals belonging to the United States.

"(2) Animals belonging to the State.

"(3) Animals brought into the State contrary to the rules and regulations of the State Veterinarian.

"(4) Animals found to be diseased, or that were destroyed because they have been exposed to disease, before or at the time of their arrival in the State.

"(5) Any animal previously affected with another disease, which from its nature is incurable and necessarily fatal.

"(6) Any animal the owner whereof knowingly or wittingly purchased affected with disease, or from a place where contagious disease was known to exist.

"This section is exceedingly specific and plain. The first class of animals would be worth no more than the carcass, which would include the hide and the skinned body for fertilizer purposes. In the second class, if the animal affected with a disease that may be cured, that must be taken into consideration, and the price fixed on the basis of a presumption of recovering health.

Very truly,

W. L. TAYLOR.

Long experience has taught that glanders, blackleg, anthrax, rabies or hydrophobia, Texas or Southern fever and some other diseases are so generally fatal that they can not be regarded as other than incurable. With the exception of glanders, the above named run a brief course and the loss of the animal will come without condemnation.

For such animals no appraisal will be made, and in case the owner insists upon appraisal if condemned, a safe quarantine may be ordered at his expense. In the case of glanders the course of the disease is slow but fatal. Such animals also belong to the first class, and while nearly always necessary to order the animals destroyed, the appraisal should be upon the basis of the carcass. In the case of suspected glanders a quarantine may be ordered until the exact nature of the disease can be determined.

Tuberculosis is a slowly contagious disease, and animals so affected will be held in quarantine, or the owner permitted to have them slaughtered under the meat inspection rules and regulations of the Bureau of Animal Industry.

A tuberculin test will be made upon the request of the owner of cattle upon the condition that he will dispose of affected animals in such manner as he may be directed.

OTHER LAWS PERTAINING TO DISEASED ANIMALS.

Whoever knowingly permits any horse, mare, or gelding, affected with glanders, to be taken from his or her premises, or to run at large, shall be fined not more than one hundred dollars, nor less than five dollars.

Any person being the owner of sheep, or having the same in charge, who shall turn out, or suffer any sheep having any contagious disease, knowing the same to be diseased, to run at large upon any common, highway or unenclosed ground, or who sell any diseased sheep knowing the same to be diseased, without fully disclosing the fact to the purchaser, shall be deemed guilty of a misdemeanor and be punished by a fine of not less than two nor more than twenty-five dollars for each diseased sheep, to be recovered as other penalties for like offenses.

In all cases where any hog, shoat, or any other domestic animal, shall die of the disease commonly called "hog cholera," or any other disease, it shall be the duty of the owner or owners of such hog, shoat, or other domestic animal, or persons having the care and custody of the same, having knowledge of the fact, or upon receiving notice thereof, to cause the carcass of said hog, shoat, or other domestic animal, without unnecessary delay, to be burned, or safely or securely buried.

If any owner or owners of such hog, shoat, or other domestic animal, so dying with disease, or any person or persons having the care and custody thereof, having knowledge of the fact, or upon receiving notice thereof, shall fail, neglect or refuse to comply with the provisions of the preceding section, he, she or they, so offending, shall be guilty of a misdemeanor, and upon conviction thereof before any tribunal having cognizance of the offense, shall be fined any sum not less than ten dollars nor more than fifty dollars.

Cases of actinomycosis or lumpy jaw may be treated or the animal slaughtered under the meat inspection rules and regulations of the U. S. Bureau of Animal Industry.

Animals affected with tuberculosis or actinomycosis shall not be permitted in dairy herds.

REPORTING DISEASES.

In reporting contagious or infectious disease, the report should give the name of the owner, the number and kind of animals affected and the exact location of the stock. If possible the diagnosis should be made by a competent local veterinarian. This is possible in nearly all cases, and may save the State considerable expense in unnecessary traveling expenses. It is not the intent of this office to diagnose the ordinary or non-contagious disease. Neither is it the function of this office to investigate an outbreak for private purposes or to prescribe lines of treatment for individuals.

Some contagious or infectious diseases, as influenza in horses, cornstalk disease among cattle, cholera among swine, or modular disease, and twisted stomach worm among sheep either can not be controlled by police measures, or are so common that attention can not be given them.

RULES AND REGULATIONS OF THE BUREAU OF ANIMAL INDUSTRY, U. S. DEPARTMENT OF AGRICULTURE.

In accordance with the provision of this act, the rules and regulations of the United States Bureau of Animal Industry, relative to the transportation of Southern cattle fever, scabies on sheep, and other contagious and infectious diseases are hereby accepted and made to apply to transportation within this State.

The orders of the U. S. Bureau of Animal Industry relative to the transportation and dipping of sheep affected with scabies are as follows: "It is hereby ordered that any railroad cars, boats, or other vehicles, which have been used in the transportation of sheep affected with said disease, shall be immediately cleaned and disinfected by the owners or by the transportation companies in whose possession said cars or vehicles may be at the time the animals are unloaded, by first removing all litter and manure which they contain, and then saturating the woodwork with a 5 per cent. solution of crude carbolic acid in water. Inspectors of the Bureau of Animal Industry are directed to see that this order is carried into effect.

"It is ordered, that from and after August 10, 1899, no sheep affected with scabies, and no sheep which have been in contact with others so affected, shall be allowed shipment from one State or Territory into another, or from any State into the District of Columbia, or from the District into any State, unless said sheep shall have first been dipped in a mixture approved by this Department.

"The dips now approved are:

"1. The tobacco-and-sulphur dip, made with sufficient extract of tobacco to give a mixture containing not less than five one-hundredths of one per cent. of nicotine and two per cent. flowers of sulphur.

"2. The lime-and-sulphur dip, made with eight pounds of unslaked lime and twenty-four pounds of flowers of sulphur to one hundred gallons of water. The lime and sulphur should be boiled together for not less than two hours, and all sediment allowed to subside before the liquid is placed in the dipping vat.

"The owner of the sheep is privileged to choose which one of the above-mentioned dips shall be used for his animals. The Department will instruct inspectors to enforce due care in dipping sheep, but it assumes no responsibility for loss or damage to such animals, and persons who wish to avoid any risks that may be incident to dipping at the stock yards should see that their sheep are free from disease before they are shipped to market."

No objection will be offered, however, to the use of any effective dip in this State.

WORK OF THE YEAR ENDING OCTOBER 30, 1901.

Sheep Scab.

One of the diseases that it is particularly desirable to stamp out is sheep scab. Being a strictly parasitic disease it is amenable to the stamping out process by dipping and due vigilance in quarantine. One of the first acts was to examine all the reports of the township assessors as filed with the State Statistician to learn the number of scabby sheep reported from each township. This was followed up by writing to the assessors for the names of the persons reporting the affection in order to definitely locate all cases.

The following table gives the number of townships in each county reporting the disease and the number of cases reported in each township:

County.	*Townships Reporting Scab.*	*Number of Sheep Affected with Scab.*
Adams	3	54
Allen	5	17
Bartholomew	2	6
Benton	2	9
Blackford	3	224
Boone	6	148
Brown	3	26
Carroll	7	193
Cass	4	24
Clark	3	71
Clay	5	41
Clinton	7	103
Crawford	5	70
Daviess	4	101
Dearborn	3	29
Decatur	5	78
Dekalb	6	187
Delaware	7	242
Dubois	4	10
Elkhart	6	146
Fayette	3	99
Floyd	1	3
Fountain	7	171
Franklin	9	79
Fulton	3	27
Gibson	2	14
Grant	6	32
Greene	5	35
Hamilton	6	131
Hancock	3	152
Harrison	4	15
Hendricks	7	590
Henry	6	41
Howard	5	27
Huntington	2	34
Jackson	4	52
Jay	7	166
Jasper	0	0
Jefferson	4	34
Jennings	4	101
Johnson	5	677

County.	Townships Reporting Scab.	Number of Sheep Affected with Scab.
Knox	2	19
Kosciusko	3	19
Lagrange	4	227
Lake	0	0
Laporte	2	22
Lawrence	3	77
Madison	6	54
Marion	6	144
Marshall	2	13
Martin	8	258
Miami	4	12
Monroe	2	4
Montgomery	9	685
Morgan	6	96
Newton	1	1
Noble	0	0
Ohio	2	15
Orange	7	139
Owen	4	103
Parke	5	435
Perry	2	4
Pike	2	35
Porter	3	7
Posey	3	7
Pulaski	3	29
Putnam	8	136
Randolph	5	78
Ripley	4	21
Rush	4	61
Scott	0	0
Shelby	6	59
Spencer	3	11
Starke	0	0
St. Joseph	3	172
Steuben	2	4
Sullivan	4	76
Switzerland	3	12
Tippecanoe	6	18
Tipton	2	52
Union	2	25
Vanderburgh	1	1

County.	*Townships Reporting Scab.*	*Number of Sheep Affected with Scab.*
Vermillion	0	0
Vigo	2	27
Wabash	5	161
Warren	2	6
Warrick	3	38
Washington	3	112
Wayne	1	5
Wells	5	341
White	6	57
Whitley	0	0

Scab was reported from 301 townships and a total of 7,433 supposed to be affected. It was soon discovered that a very large number of assessors reported only a few sheep affected—some seemingly thinking it was necessary to put some number to fill out the blank. One hundred and eighty-nine reports show less than ten cases in the township. As scab is a disease that is contagious, it is not probable that more than a few of these reports are correct. Our estimate of the actual cases after investigation, deducting these erroneous reports and cases of mistaken diagnosis, is that there were a total of about 4,500 animals affected.

These sheep in great part had been dipped by the owners prior to our information, and some had been prepared for the yards and sold. About 2,700 were dipped by our advice.

A newspaper bulletin upon sheep scab was prepared and sent out under the auspices of the Experiment Station. It was very generally printed by the 600 newspapers, so that information upon the law was general and efforts to locate new cases resulted in finding less than 400 head. At this date (October 30) there are only 250 animals in quarantine and these have been dipped as required. The following is a copy of the newspaper bulletin:

SHEEP SCAB.

[Bulletin.]

Among the acts of the last session of the Indiana Legislature was one making it compulsory to dip all scabby sheep. The object is to stamp out this expensive but unnecessary disease. The reports of the state statistician for the past few years have shown that there has been a considerable number of sheep affected. The forthcoming report will show more than 8,000 head reported to be affected for the year ending June 30. There is no question but there have been many errors in reporting, but deducting these there still remains a large number of affected sheep.

Scab is produced by an itch mite, that causes itching, rubbing, pulling and shedding the wool, causing a bare and scabby skin. The parasite can not live for any great length of time off the skin and does not thrive on any other animal. It is therefore possible to stamp out the disease by killing all mites by dipping. Solutions of tobacco, lime and sulphur and arsenic are effective for this purpose. The tobacco solutions have preference. They may be made by taking from 20 to 25 pounds of tobacco leaves and steams and soaking for one day in sufficient water to cover. Then boil for an hour and draw off after six hours. Dilute to 100 gallons. Add 20 pounds of sulphur and use while warm. The lime and sulphur dip may be made by slacking eight pounds of lime in some water, adding 24 pounds of sulphur and diluting to 100 gallons. It is troublesome to prepare the tobacco solution, and is about as cheap to buy the extract ready for use. The lime and sulphur dip is injurious to the wool. It requires on an average of one and one-half gallons of dip solution per head for more than 25 head. The second dipping is necessary at the tenth day, so that the cost for material must be reckoned at about five to seven cents per head. The coal tar or creolin dips are excellent for ticks but not as effective as they should be for scab. As far as known nearly all affected sheep have been dipped, but any person knowing of such disease should report the same to the State Veterinarian, Lafayette, Ind., at once, as efforts will be made to complete the work before cold weather.

BLACK LEG.

This disease was reported from a number of places in the state. While not a contagious disease in the usual sense of being spread from one animal to another by coming in close contact, it is infectious, and the conditions making it favorable for the attack in one may also affect several. It thus happens that usually from one to ten animals become affected and die suddenly. To those not familiar with the disease it does cause considerable alarm. Visitations were made to a number of farms, and the following newspaper bulletin was issued upon vaccination as a preventive measure:

VACCINATION AS A PREVENTIVE OF BLACK LEG.

While black-leg is a disease that has been known for a long time and vaccination for its prevention has been practiced for several years, this means is not generally known here. The disease was formerly of much more frequent occurrence than at the present time, but there still remain centers of infection that cause the loss of many dollars worth of stock each year.

The disease is infectious but not contagious; that is, the germs live on the plants on which the animals feed or in the water they drink and thus gain entrance into the body, but they are not conveyed from one animal to another by merely coming close together.

The germs are usually found on the grasses growing upon low rich land. The spore or seed of the germ is very hardy and may be dried in the making of hay and produce the trouble when it is fed in the winter. Most cases occur in summer and fall.

The symptoms are sudden onset with high fever, difficult breathing, stiffness, lameness, colicy pains, loss of appetite and great depression. Swellings occur upon the body, about the thighs, chest, neck or shoulder, and these have a peculiar crackle when pressed upon by the finger. They are filled with gas. The course of the disease is very rapid, only lasting from a few hours to a few days. Young, well-kept cattle from four months to two years old are the favorite subjects, although older cattle may be attacked. Very few recover, and treatment is useless in the majority of cases.

Every animal dying of the disease should be burned.

On farms where cases occasionally occur, it is advisable to vaccinate. The vaccine may be obtained from several reliable firms, and its use has passed beyond all experimental stages so that it may be relied upon to greatly diminish the loss. It is easily applied.

R. A. CRAIG,
Assistant State Veterinarian.

The region in which most cases have occurred is in the northwestern part of the state in the lowlands drained by the Kankakee. The conditions are peculiarly favorable for the growth of black leg germs here, and it will be several years before it can be gotten under complete control. The valleys along the Ohio are also more or less infected.

Oftentimes these outbreaks were reported as genuine anthrax. The clinical history, symptomatology, and pathology of the two are so different that their differentiation was not difficult. No case of genuine anthrax was observed.

INFECTIOUS OPHTHALMIA IN CATTLE.

An eye disease of cattle has occurred with greater or less frequency since the year 1891. While it is not a disease that is fatal in its effects it does cause much loss of flesh during the period the eyes are affected, and often such impairment of vision as to make very considerable losses to a herd. During the summer the reports of the presence of the disease became so numerous that the following newspaper bulletin was offered:

[Bulletin.]

Since early in the spring reports have been received from stockmen to the effect that a strange eye disease was affecting the cattle. These reports have been received from widely separated localities, showing that the disease has a quite general distribution. In some places the cattle simply have sore eyes, and in others the affection is more serious and a greater or less number go blind. The loss is not so much from the number that are blinded, as to the unthriftiness occasioned, and to the diminished milk flow in dairy cattle.

This disease is infectious, and when started in a herd is likely to attack a large per cent. of them before running its course. It occasionally affects sheep, but rarely horses. It has been attributed to a variety of causes, as the pollen from some plants, and to dust. The disease does usually occur at a season of the year when both pollination and dust are at their most irritating stage, but we are inclined to believe that these are only secondary causes. The germs that have been found are pus producers. This Station regards the disease as one produced by a special organism. The disease is not new, having made its appearance in this State ten years ago, and remained ever since.

The symptoms are local and general. The body temperature is raised, the appetite interfered with, and rumination checked. In the mild cases these symptoms are not marked. When first affected one or both eyes are held nearly closed, the lids swell, and tears pour over the face. A whitish film forms over the eyes, which may become dense. The cornea may bulge forward owing to the pressure of the abscess from within. Yellow spots from the size of a pinhead to that of a grain of corn form, and from the margin will radiate reddish lines. These are abscesses, and when they heal whitish scars will take their places. One eye may be attacked and then the other. The course will last from three to six weeks, but it rarely happens that there is complete blindness in both eyes.

The treatment is comparatively simple. Keep the badly affected cattle in the shade of a woods, or in the barn if necessary, during the middle of the day, to prevent aggravation. Locally, apply equal parts of finely powdered boracic acid and calomel, by means of a small insect powder blower. This can be done quickly with little restraint, and is preferable to an eye wash for the cow.

R. A. CRAIG,
Assistant State Veterinarian.

CONTAGIOUS ABORTION.

A disease that is little known to the public, but one that is a most trying annoyance as well as the cause of considerable loss to breeders, is contagious abortion. The presence of a single case of glanders in the community is a signal for a popular demand that immediate action be taken to stamp it out. The presence of a suspect is sufficient to ask that a state investigation be made. The losses from glanders is small compared with that from contagious abortion, the danger of rapid dissemination of the former disease in a stable is slow as compared with that of the latter in a herd, but the attitude toward control is wholly different. In the case of contagious abortion the effort is to keep the matter quiet. If advice be sought it is always upon the supposition that no information be given out.

For several reasons this disease promises to become one of the most difficult to control. It occurs most often in herds kept especially for breeding purposes. The animals are high grade usually, in fine condition, and present no distinctive indications by which a veterinarian can select affected from healthy animals in the herd. The presence of the disease and the extent to which it has affected a herd can only be determined by the history furnished by the owner or herdsman.

He may not see fit to impart a complete history, and thus the matter rests. Whether the male may communicate the disease from one herd to another is still a matter of dispute. How long infection remains with and is capable of dissemination from one cow to another is still an unsettled problem. How far a quarantine should be placed upon a herd, upon all whether affected or not, and for what length of time, is a matter that can not be settled fairly without a special investigation. Another problem of equal importance is that of a determination of the injury to the breeding powers after the attack by the disease.

To what extent the disease prevails is not known. From May to this date we have been asked to investigate nearly 200 cases occurring in herds aggregating 700 cows. In some herds the loss was about forty-five per cent. while in one it is as low as eight per cent. In two herds the disease has now been in progress for about two years, and in three it is in its first year. How long it will continue is not known.

A very complete system of disinfection was begun as a line of treatment. What the result of the treatment will be can not be determined at this date. Some of the cattle show considerable injury as a result of the attack and whether this is temporary or permanent can only be determined by subsequent observations. Very complete studies have been made upon the histology of the reproductive organs at all stages of foetal development, and records made upon the pathological change in the foetal membranes, but it has been deemed best to defer their publication until further data becomes available.

It is upon this disease that special investigation has been made as provided under Section 2 of the act creating the Live Stock Sanitary Law.

TUBERCULOSIS.

It is recognized that this disease is the cause of more loss among cattle than any other in some of the eastern States and foreign countries. As far as known it is not generally prevalent in this State, but in herds in which it has gained foothold the per. cent. affected sometimes is very high. It is recognized as a contagious disease and some States require that all breeding and dairy animals entering must be accompanied by a certificate of a tuberculin test or be tested on their arrival. It so occurred that several breeders found it necessary to have a certificate from the State Veterinarian to accompany their shipping stock. As far as possible, the testing of the cattle was done by the local veterinarian at the breeder's expense and a certificate issued upon the record furnished.

Glanders among horses was reported from Oxford, Thayer, Roselawn, Delphi, Petersburg and Laporte with the result of finding two cases at Laporte and one at Petersburg. At Laporte three other animals had died of the disease prior to notification of its existence.

RABIES.

An outbreak of rabies of more than usual severity occurred in the vicinity of Greencastle during the months of May and June. Fourteen cattle out of a herd of thirty-eight head became affected and died. Other animals in the neighborhood also died but no accurate record or report was made upon them. The history of the cases was clear. The animals were probably all bitten near the same time but there was a variation of about forty-five days in the period of incubation. Other outbreaks of the disease were reported, but as usual in such cases, they terminated very quickly and thus settled all question without the necessity of visitation.

Texas itch or mange was reported but necessitated only one visit to make a diagnosis and enforce treatment.

The death of several cattle near Peru due to an unknown cause upon investigation was found to be due to the discharge water from an oil well.

Undiagnosed disease of horses were reported from a number of localities which upon investigation were as a rule found to be some form of influenza. This constituted by far the greater number of cases. Oftentimes a competent veterinarian resided in the vicinity and in such cases the owner was instructed to call upon him and make some effort to help himself before seeking aid from the State. It had the desired result in nearly every instance.

One outbreak of disease among imported Canadian cattle occurred in the vicinity of Sheridan. Seventeen out of a shipment of nineteen died within one week from the time the first one was attacked.

Investigation revealed the cause to be due to the feeding.

A number of diseases were reported that were not contagious and therefore no attention was paid to them other than to give a courteous reply to employ local aid when such was available, and when such was not to give some directions as to treatment that might be of assistance.

FINANCIAL STATEMENT.

A complete itemized statement, with all bills and receipts attached, has been filed with the Auditor. A summarized statement is as follows:

Expenses: Car fare, livery hire and hotel, postage, etc.—		
May	$35 83	
June	33 65	
July	20 35	
August	28 10	
September	33 65	
October	13 90	
		$165 48
Expenses of Assistant—		
May	$6 80	
		6 80
Expenses for animals condemned—		
September	$12 50	
October	20 00	
		32 50
Expenses: Supplies, printing, stationery—		
July	$23 37	
October	61 33	
		84 70
Salary, Assistants'—		
June	$20 00	
July	20 00	
August	40 00	
		80 00
Salary State Veterinarian—		
May	$100 00	
June	100 00	
July	100 00	
August	100 00	
September	100 00	
October	100 00	
		600 00
Total		$969 48

REPORT

OF THE

Indiana Aberdeen-Angus Breeders' Association.

The Indiana Aberdeen-Angus Breeders' Association met in their first annual session in room 11, State House, Indianapolis, Indiana, at 1 p. m., January 8, 1902, President W. R. Pleak in the chair.

Upon roll call, twenty-one members answered to their names.

Motion by T. C. Phelps, of New Castle, that before hearing report of Committee on Constitution permission be given those desiring to become members to do so.

Motion carried, and the following names were added to the roll of members: H. O. Balman, Bainbridge, Ind.; Stirling R. Holt, Indianapolis, Ind.; Jesse G. Donnell, Greensburg, Ind.; J. O. Mendenhall and Son, New Castle, Ind.; Tony Schaaf, St. Paul, Ind.; W. A. Smith, Marion, Ind.; E. B. Wingate, Shelbyville, Ind.; Robert Peebles, Crawfordsville, Ind.; J. E. West, Sheridan, Ind.; M. A. Judy, West Lebanon, Ind.

Report of previous meeting was read and adopted.

The Committee on Constitution being ready the report was read.

Motion by A. Linemyer, that the report be acted upon by sections. Carried.

The report was read and adopted by sections, and on motion of J. E. West, of Sheridan, was adopted as a whole.

The question of an Indiana Aberdeen-Angus show at the next Indiana State Fair was brought up and discussed, and met with universal favor.

Motion by Mr. Johnson, of Aroma, that we give an Indiana Aberdeen-Angus show at the Indiana State Fair of 1902, stock shown to belong to members of the Indiana Aberdeen-Angus Breeders' Association.

Motion carried unanimously.

On motion of Stirling R. Holt, all matters pertaining to the classification and working up of the show were referred to the Executive Committee.

It was decided that the officers elected at the preliminary meeting should continue for 1902. They are as follows:

President—Will R. Pleak, Greensburg, Ind.

Vice-President—F. C. Fleming, West Lebanon, Ind.

Secretary and Treasurer—G. W. Henderson, Lebanon, Ind.

Trustees—T. C. Phelps, New Castle, Ind., and Geo. H. Swain, Pendleton, Ind.

The members then listened to a paper by W. A. Swain, of Pendleton. Subject, "Angus Cattle, Past, Present and Future."

Mr. Hornady, who was to lead the discussion, not being present, the discussion was general. After the discussion the meeting adjourned till 7:30 p. m.

The evening session was called to order at 7:30. Mr. F. C. Fleming, who was to read a paper, not being present, the subject, "Selection and Proper Handling of Herd Bull," was taken up by T. C. Phelps, of New Castle, and very ably handled. The discussion was general. Then the paper by G. W. Henderson was read, subject, "Mating and Proper Handling of Cow During Prenatal Period," and brought out a very lively discussion.

The meeting then adjourned to meet on call of President.

WILL R. PLEAK,
President.

G. W. HENDERSON,
Secretary.

REPORT

OF THE

Indiana Swine Breeders' Association.

PRESIDENT'S ADDRESS.

Fellow Citizens and Members of the Indiana Swine Breeders' Association:

Being a farmer and breeder of swine, and having spent much of my time with the swine industry, a potent fact occurs to my mind, that as a rule swine breeders are farmers, and as a rule farmers are not public speakers. Consequently I have no rule to operate under as a public speaker, and feeling that the members of this Association have inherited the same rights we will not be subject to criticism; but if, as the chairman of this Association I should ask for three rousing cheers for the swine industry, and the advancement for 1901, every member would be on his feet with his hands up, and mouth open, ready to respond to the call of the chairman. This being the case, I hope to see one of the most enthusiastic meetings in the history of this Association. So keep the question box open. The first year of the twentieth century marks the most progressive age of the world in the history of great events. Mercantile and mechanical skill have shown such magnitude that the people stand aghast, and are wondering what shall we expect in the future. Every day brings to the minds of the American people some scientific discovery, and while we don't wish to speak especially of the skill and business capacity of the Americans, I feel justified in making the statement, that we will be able to look after our interests in the markets of the world. Looking at the past as evidence of the future, we think we will be able to keep the open door in the markets of the world. This accomplished and the American breeder goes into the arena and with his products shares the intellect of the world as a producer of thorough-bred stock, and in production of quality we are in touch with the products of the kings and queens of the European countries. True to the traditions of the American swine breeders, we have grown by our skill the wild hog of the forest, and made it the most profitable and desirable stock on the market of the world. And by judicious breeding and by importation of the best blood known to the different breeds of swine, and by skillful mating to produce the desired type of the most popular porker on the block, and by showing our skill in marketing the product in the markets of the world, we are advancing step by step, and in the face of our advancements still greater demands of skill are being made upon our progressive movements in the future. To be American is to be independent. Freedom of thought, of action and of opinion we admire. With these thoroughly American prerogatives comes the indisputable right of opinion. If we admire any one thing in the character of a man more than any other it is that vigor of brain which enables him to think for himself, freely and fairly, and to conscientiously hold himself open to conviction; and, being convinced, to have that stalwartness of true manhood to adapt and follow those convictions. So, much greater success attends such a course in whatever line of life it may occur. The happiness and satisfaction as a result is greater when compared; and while this is true, to be constantly changing is considered as a rolling stone, and is not to be admired or should not be encouraged. A man should have well-studied reasons for modifying a cqurse once adopted before abandoning the pursuit. One might readily determine that a change is advisable in his course of procedure, and it is a fact that circumstances sometimes alter cases and some have experienced misfortune in seeking for more enlightenment. But such should not be condemned, as they have learned the lesson from actual experience. A sufficient cause for breeding a certain class of stock is that it is their fancy for certain breeds, and with others it must have a money consideration or value; but all realize the one potent fact that money does make the mare go, even in the selection of breeding stock, as we have seen the breeder spending his money freely because of the popularity of the strain of blood represented in the sale. This being the case, then we must reason that certain lines of blood make money. Why? Because they have become popular and make the breeder money. It seems poor reasoning, but it is true, that a certain strain of blood is sought after because it does sell and is popular as a strain of blood. But it is also a fact that some of the so-called popular strains of blood are based on fictitious prices and should be investigated as to the individual worth of the so-called popular blood lines. This being the fact, breeders should be very careful in selecting their breeding stock. And yet they should not be so slow as to be abandoned in activity and drop behind the lines of progressive breeders. Good and sufficient reasons are absolutely necessary in a money consideration, in all cases where the selection of breeding stock is called for, as the judgment and reputation of the breeder depend largely on the real merit of his breeding stock.

It is not my intention to speak in any uncomplimentary terms of any breed or breeders. But it is embarrassing to a young breeder, or even the older ones, to learn from experience that he has paid a fictitious price for an individual that really has but little real merit. My main object in speaking of the popularity of certain strains of blood is that simply because they are popular the breeder too often brings the lines of blood too close, in order to trace on the popular lines to a certain individual, and in some cases to the point of inbreeding; and being a firm believer in the fact that inbreeding is in many ways detrimental to the constitution and vigor in mating of all classes of stock, I feel that it might be the means of directing the minds of breeders from the practice of line breeding to excess, to the injury of the constitution and vigor of the hog, one of the most profitable products of the corn belt of our country. And for fear that some breeder might think that I favor crossing the different breeds for constitution and vigor, I would ask why should a breeder breed an individual of stronger constitution to one of less to improve. Being a firm believer in the principle that like begets like, and in the different breeds we have the type to correct our mistakes from. but in cross-bred hogs we have lost the type and have absolutely nothing but a mongrel and nothing to correct our mistakes. And as the breeding and care of swine has come to be a science, and it is from our swine breeders' meetings, and live stock journals, and experimental stations that we derive our greatest help, and they have been the means of improvement both in breeding and feeding of the different breeds, until we have arrived at the point in the breeding ring, as in the speed ring, one to be a success must be able to make a high mark. And as a correct principle the man that can produce the best of anything is the man that is successful in his operations, as he can sell good quality at a good profit much easier than he can sell the inferior at a low price. So I would say hold fast to that which is good and look well to the future. Remember that in union there is strength. Strive to do more for the swine industry the coming year than we have the past year. And speaking for the members of this Association I believe I am safe in saying that we fully realize our responsibility as breeders, and in the future as in the past, while we will not all have the privilege of riding in the procession on the band wagon, we will have a few breeders and plenty of lions when the procession moves down the line. Kindly accept my thanks for the honor which by your kindness you have given me as a member of the Association.

CARE AND DEVELOPMENT OF THE SHOW HOG.

WM. R. MIDKIFF, SHELBY COUNTY, IND.

As the majority of breeders who fit swine for exhibition use practically the same methods, I have no new theory along this line to present to you, but will give you briefly an outline of the methods I have used. To begin with, we must select our very best animals of suitable age to compete in the various classes; yet, we must have judgment to select those of proper form, that may be brought to a high state of perfection when finished. It is not always the tidy show pig of four to six months of age that develops into the sensational yearling. This is an age of keen competition, and it behooves us to breed only the best class of stock as well as give it the best care and attention, or we will be left behind by those who are more progressive and wise than we.

It requires much skill and judgment to properly develop our animals. No set rule can be laid down for the proper development of animals; what some need, others may not. We will suppose one has already selected his stock for the different classes from the two-year-old on down to the six-months' class. We never confine in a small pen an animal intended for the show ring, nor do we keep one alone. We want each bunch to have clover, bluegrass or rape pasture of reasonable size, where they take exercise and grow bone and muscle as well as put on fat. They should have good shade and be supplied with fresh water at all times; but do not let them have access to running water or wallow holes, as hogs used to having water to lie in can not stand the heat while on the fair circuit. I use the "Improved Dewey water fountain," and find it very satisfactory.

In the feed line we need a variety of feeds to make a well-balanced ration. Sweet skimmed milk, with good wheat middlings, ground oats (finely ground), and as free from hulls as possible, corn meal and ground wheat in connection with soaked shelled corn, constitute our feed ration. The first part of each feed consists of about one-fifth ground wheat, one-fifth corn meal, and the remainder ground oats and wheat middlings of equal parts, mixed thoroughly with water, and what milk we have. It is made just thin enough to pour, so the pigs will not be forced to take too large an amount of water into the stomach in order to get what feed they need. It is prepared immediately before feeding, so as not to ferment, as we feed nothing sour to our hogs. The second part consists of soaked shelled corn with a change to soaked oats or barley. About a month before starting out on the circuit, we would commence gradually to drop the milk from the feed and entirely discard it before starting out. It is almost impossible to obtain milk at some shows, and if accustomed to it and can not get it, our hogs will not eat as they should and will not be in prime condition to show. Eggs are a splendid food for animals being fitted for the show ring; besides being a complete food, they will aid digestion, will make the skin pliable and the coat glossy. We keep salt and ashes before our stock all the time. We should use judgment in our care and feeding; never feed more than they will eat up clean. We want the fitting period to extend over several months; in fact, from infancy to the time of showing it should be a gradual and complete development of all parts of the animal, and not a short crowding period that is more or less liable to injure the breeding qualities. I consider the matter of shedding at the proper time one of importance, and very hard to accomplish in preparing the herd for the show ring.

If the old coat is shed by the last of July or first of August the new coat will be in full bloom about the proper time. A daily grooming and frequent washing with soap and water, with a little nitrate of lead dissolved in it, will add quality to the appearance of the skin and will also aid in shedding the old hair. In the care and development of swine for exhibition there are many details that must be attended to, such as keeping the appetite in the best possible condition; feeding a balanced ration; keeping the feet trimmed; see that each one takes a proper amount of exercise each day, and so handle each animal that it will be at its best at the time of showing. The developing and finishing of animals for the show ring is a work of art and good judgment. There is a time, if properly fitted, when every animal of the herd will be in full bloom. This time should be when the shows are on, not a month before nor a month after the shows are over.

To hit the mark at the right time is an art that takes many years of close observation and patience for we young breeders (and older ones, too) to learn.

MY METHOD OF CARING FOR SOW AND PIGS.

W. A. HART, NEW MT. PLEASANT, IND.

Mr. President and Gentlemen—The treatment that can most profitably be accorded the sow and litter depends very much upon the individuality of the sow and the treatment she has received from birth to the time of farrowing. If she be a cross, mean-dispositioned brute, that grows restless and irritable whenever approached; if she be a half-starved, undeveloped sow that runs to a point at each end and to a hump in the middle; if she be an individual that has been made to farrow a few litters of pigs and has at each litter raised only a small number of pigs, thus causing a number of teats to dry up prematurely so that she will henceforth be an uneven suckler, and raise pigs of all shapes and sizes, or if she be a neat little compact animal that has had a reasonable amount of size forced upon her by excessive feeding of very rich and very palatable foods, has been permitted to lie in her bed between meals and look pretty and grow gouty, the most profitable treatment for such sows and litters, whether under the management of the farmer or breeder, is to destroy the litter at the first opportunity and market the sow for pork at whatever time and at whatever price she may be made to go upon the market, because such sows and litters are always unprofitable even with the ablest and most intelligent management. On the other hand, if she be of a large, growthy type; if she be of intense breeding that will insure her to reproduce herself, if she be of a family that produces regularly eight to ten pigs of uniform size at a litter and two litters each year; if she be of a kind, quiet disposition and a heavy even suckler from all of her teats, thus insuring continued uniformity in the size and development of her litter, by proper care and management one's hope for profit will be realized. Carry the sow to near a year of age on a liberal allowance of a well balanced but somewhat bulky ration, and allow her plenty of range to induce exercise. At about this age breed her for the first time to a well bred, desirable type of mature boar, and so time the breeding that the sow will farrow near to the first of April or first of October each year. Let the sow and boar be of the same breed and let them be pure bred to insure uniformity of style, type and appearance of the litter. It is especially important that the sow attain considerable size that she may carry considerable extra flesh to suckle off to the litter; besides, no one thing adds more to the appearance of the country home than to see every variety of farm animal be of uniform appearance and represent a good type of some pure breed. It is of as much importance that the sow that is intended for a brood sow be handled from time of farrow so that she becomes perfectly quiet and tractable, so that she can be changed from one place to another without causing her any special uneasiness. She should be as tractable at all times and as quiet and safe to work about as the horse or the cow. After breeding, continue the sow on the liberal well-balanced bulky ration up to farrowing. Cut clover hay mixed with ground feed and made into a slop is especially well adapted to give bulk to the ration for the brood sow. Sows so cared for should farrow their pigs near to the hundred and sixteenth day after breeding. A good sleeping house is as essential to success with the sow and litter as is feed or breeding. One of the best sleeping houses may be made about six feet wide and eight feet long, sided up on the outside of the studding with matched siding and the side walls covered on the inside first with tarred roofing board and this in turn covered with half-inch sheeting of rough lumber, with a plank floor made to lit flat on the ground to prevent draught, with the house fitting down and entirely outside of the floor. Use a transom in the south of the house to admit the sunlight. Hogs pay much more for especially good housing than any other farm animal. If the weather is liable to be especially cold and disagreeable at farrowing time the pigs when first farrowed will withstand the cold very much better if the sow has been made to exercise and withstand considerable exposure right up to the day of farrowing. Many recommend violent changes of feed and management at farrowing time. In practice such changes seem to frequently induce indigestion and to generally derange the health of the animal. Greater success with the litter seems to attend one's efforts by giving the sow at all times sufficient feed to prevent her suffering from hunger and growing restless. The feed for the sow and litter should never be very cold. If the sow will be content to lie quietly with her litter for the first twelve to twenty-four hours after farrowing, it seems to be the better practice to not disturb her. After farrowing, gradually increase the feed in quantity and also make it richer in quality up to about the third week after farrowing, when the sow should be on full feed. If care has been taken to see that the sow and pigs have taken abundant exercise at this time the sow will be giving a heavy flow of milk and the pigs will be large, growthy fellows ready and anxious to turn the milk to good account. Pigs should be stirred about in their bed when two days old, and be closely observed each day thereafter and be made to take considerable exercise. The bed for the sow and litter must not only be free from draught, but must also be dry and free from dust. Bright baled wheat straw seems to be especially well adapted for bedding the sow and litter. Rye straw seems to cause coughing, and oats straw is not fit for such a purpose. Grass or some succulent feed should be provided for the sow and litter, and the pigs should be allowed a liberal amount of solid food as early as they will partake of it. It seems to be necessary to the health of the pig that he be able at an early age to procure solid food in considerable variety. The usual form of creep should be used for the little fellows to make it possible to feed them unmolested by their mother. A separate lot and sleeping house should be set apart for each sow and litter. In cool, damp weather especial care must be exercised to prevent thumps. The practiced eye of the experienced feeder at once sees danger of thumps in the sleek glossy coat of his little beauties. The sure, quick remedy for thumps is exercise, either by brisk driving or by dropping the affected pig into an empty barrel or box apart from his mother and allowing him to fret and try to get out for an hour or so each time, and two or three times each day, until the trouble disappears. If the pig gets stupid and refuses to fret and jump when placed in the empty barrel, lay the barrel down and roll it back and forth with the pig in it for a few times. This will wake him up and cause him to want out. Scouring is usually either due to a damp bed or the condition of the sow's milk. Upon the first appearance of scours among the pigs, give the sow a tablespoonful of sulphur or about the same amount of slacked lime in her feed each feed until the trouble disappears. See that the bed is kept dry and free from dust or draught. The addition of lime seems to be an advantage to almost any ration. Use it in the proportion of about one tablespoonful of slacked lime to each two hundred pounds of hog. The addition of lime to the ration seems to grow a much stockier, stout built pig, and to develop the litter very uniformly. Continue liberally feeding the sow and litter up until the pigs are eight or ten weeks of age, when the sow should be removed entirely out of sight or hearing of the pigs, and after about five days she should be ready to breed for the succeeding litter. Such treatment should produce more than one hundred strong, healthy, vigorous pigs each year to each half dozen sows used in the breeding herd.

PREPARING PIGS FOR THE SHOW RING.

E. J. BARKER, THORNTOWN, IND.

This is a very important matter to the breeder who follows the fairs as an exhibitor. It is necessary to begin this preparation long before the birth of the pig. That is, in the selection and proper mating of your breeding animals. After having selected your brood sows, it then becomes a problem—in fact, it is a science and requires careful study for a person to know just what kind of a boar is best suited to mate with her. After having fully determined upon the cross you are going to make, and your sows are now safe in pig, it is not time yet to rest and let them take care of themselves, but from this period forward until the pigs are driven into the show ring there is constantly something to do, to keep the sow in a healthy, vigorous condition so that the pigs, when they are farrowed, may be large and strong. The care of the brood sow during the period while she is supposed to be carrying her yound (i. e., in the winter season). Sows and pigs having been discussed, we will now take up the subject of preparing pigs for the show ring, beginning on them now at birth. First, it is very important to keep all sleeping places and feed troughs clean and sweet, allowing no filth of any kind to accumulate about their quarters that can possibly be avoided. It is necessary to keep pigs thriving all the time in order to successfully compete in the show ring in this day and age of competition. And in order to do this, you must very carefully guard against scours, as this is one thing that cuts a pig down quicker than most anything else. We usually have our pigs coming in a pen to themselves and drinking a little new milk or warm slop by the time they are three or four weeks old. From this time forward, give them plenty of good, rich slop, but be careful and do not stall them by giving them an overdose in your anxiety to crowd them to their utmost capacity. Always keep plenty of good, fresh and pure water where they can get it. And in hot weather prepare plenty of shade. As to feed, be sure they have a liberal amount of green food. Either grass of some kind or rape. We find nothing as good as common clover or rape. We feed some corn, but only in a limited way, as our experience teaches us that it is not a good bone and muscle-producing food. Our main dependence as feed in preparing our show pigs is slop, made with wheat middlings, mixed in milk and water—the more milk the better. We have at times fed some oil cake meal, and we find it to be very beneficial, and aids greatly in putting that silky appearance to the hair and mellow touch so much admired in the show ring.

It is an all-important factor to keep the pigs free from lice. This is a very hard matter to do, but with a determined effort and a liberal use of crude coal oil or any other good louse destroyer it can be done. We have never found anything so good as the common crude oil referred to. It is also a great advantage in showing your pigs, that they be gentle and quiet.

To become a successful exhibitor one must have the proper kind of stock (no matter what breed it is). It must combine size and quality, and then if the above methods as regards cleanliness and feeding be adhered to you will have the finish, and will be listed among the successful exhibitors at the coming fairs.

THE SINGLE JUDGE SYSTEM: CAN WE IMPROVE IT, AND IF SO IN WHAT WAY?

ADAM F. MAY, FLAT ROCK, IND.

Mr. President and Brother Swine Breeders of Indiana—The subject, "The Single Judge System: Can We Improve It, and, if so, in What Way?" seems to me covers a good deal of ground—more, I am afraid, than I will be able to discuss at this time. However, when I am through I trust you, as breeders, will not be backward in expressing your opinion on this all-important subject.

First I will say that in my opinion the single judge system is the only proper system to judge stock of any kind. But to make even this prove a success, and to be satisfactory to all concerned, a great many things are to be taken into consideration. Hence I would urge that possibly our examining committees at our swine breeders' institutes have been a little too lenient in granting or issuing license. (Otherwise I might never have held one.) I would urge that license be granted only to men who are honest and upright in all dealings, and then only after a very rigid examination, thereby proving themselves to be thoroughly competent for the judging of swine. And this, my brother breeders, is the only way wherein I can see where we as a body of breeders can improve the single judge system.

The next cautious step to be taken is by the fair association who employs or has the judge in charge. I would urge that only competent, trustworthy and reliable men be employed.

By all means never employ a man who is hunting the job, for it too often happens that he is either looking for a rake-off or has an ax to grind. I would urge that the names of all judges be printed in the premium list, so that each exhibitor may know who is to pass on his exhibit, and if he doesn't care to attend, then let him stay at home or go somewhere else.

With the right kind of a judge employed and on the ground, and the animals to be passed on in the ring, we come to the point where the greatest amount of improvement can possibly be made in the single judge system, viz., by having the Superintendent clear the ring, so to speak, and allow no one to be in the ring where the judging is going on, except the owner of the stock and his assistants, or those who necessarily have charge of the stock being at the time exhibited. When I say to have no one in the ring except those actually needed, I mean to exclude all those who call themselves newspaper men, for they have no more right in the show ring than any other man. The judges could do their work as well, and possibly better, if they were out of the crowd, and were not jostled around so, and thereby could possibly make their report a little more accurate.

To remind you, brothers, of the necessity of keeping the ring clear. I will call your attention to the surroundings at our last State Fair, when I saw our friend Mugg actually have to climb over the fences and go around the crowds to get to see the hogs he was passing on, and those of you who had the pleasure to attend the stock show at Chicago know the conditions there were as bad if not worse than at our State Fair.

Another way the system might be improved is for the Superintendent to call out the hogs, and order them up at the proper time, and not have the judge waiting, and he not knowing when they were all out and ready for him to begin passing on them.

So this, my brother breeders, I believe is the best way to improve the single judge system: Be more careful to whom you issue license, select the best of judges, and after you have them employed give them a chance to see the stock on which they are passing, by keeping the crowd back; have the Superintendent do his full duty; exhibitors not to answer questions till they are asked by the judge, and when so asked to be sure and tell the truth, and when all this is done we will find the single judge system will be greatly improved.

MY EXPERIENCE WITH IMMUNES.

W. O. CANADAY, FRANKTON, IND.

Mr. President and Gentlemen—Our worthy secretary informed me that your committee had, in its wisdom, seen proper to select the subject, "My Experience with Immunes," and had assigned the same to your humble servant for discussion and report. As rebellion is repulsive to every good citizen of our beloved country, I accept the edict of your committee, and in my feeble way undertake to discharge the duty imposed upon me. I hope in the discussion of this subject to be able to say something that will stir the Irish of members of this meeting, to the end that knowledge and information may be gained thereby. We gather ourselves together each year for social greetings and the interchange of ideas and thoughts pertaining to our business. Therefore, it is not good that we should shrink from duty if these meetings are to be pleasant and profitable. The limited experience had with immunes and in trying to immune hogs is a short story, but cannot be told without enlarging somewhat upon the means used.

I do not understand that I am to give a recitation on hog cholera, but what can you say about the results obtained with the means used for protection?

The protection here mentioned is not the kind that politicians talk about, but that which stands between our hogs and danger. If such a thing has or ever will be discovered, certainly the originator will be one of our greatest benefactors. Hog cholera costs the breeders and feeders of swine many hundreds and thousands of dollars annually.

Because of this enormous loss, scientists are ever looking for a panacea which will both cure and prevent. You are familiar with the many sure cures and preventives, but it is not the purpose of this paper to dilate upon any of these.

I have looked upon the theory of immuning pigs from immune sows with quite a degree of favor; yet there are shadows, doubts and uncertainties connected with the process that must be removed, and the way and means furnished that will lead to sure and satisfactory results.

It is not the purpose of this paper to in any way discourage research and investigation on the great question of how to immune hogs against cholera, but rather to encourage and stimulate such effort.

That the problem is a difficult one goes without saying, as it has baffled the skill and ingenuity of the best minds of the country; but it seems that there is no question too great for American skill and ingenuity to solve. Hence the perfecting of a system of immuning hogs is looked for that will be sure and certain.

The facts set forth in the Ridgeway theory deserve our careful consideration. I believe, from my experience with this process, that there has been a ray of light brought to view which will eventually bring relief to every producer of pork. I believe also that the originator of this process has much yet to learn before its perfection is complete.

Some of us who have attempted to immune our pigs have failed, while others are satisfied with results obtained. My experience with it leads me to the conclusion that it is good and that it is bad. You wonder how this can be—a thing both good and bad. Electricity is a good thing when rightly applied; a bad thing wrongfully applied.

Two years' experience has taught me to have implicit confidence in the fact that pigs farrowed in cholera by immune sows renders such pigs thoroughly and permanently immune. There is a principle involved here, as I believe, when once thoroughly understood and applied, will solve the question at issue. How many can look back and see a sow and her litter passing through cholera without loss or harm! Such sows are looked upon as immune, and save their pigs by transmitting this immunity to them before birth or through lactation.

Looking at the question from this point of view, the antitoxine or serum treatment is the only ultimate solution of the problem to be solved. Some seek to effect immunity by injecting antitoxine directly into the blood, which seems to be in line with the principle referred to. Others try to effect immunity by artificial means, by passing serum through the blood of the mother, thereby immuning pigs in utero. These processes are comparatively new, and much yet may be learned about them.

The question arises here, why do not pigs from immune sows farrowed in cholera sicken and die as do pigs from susceptible sows, and why do not such pigs take cholera when again exposed to the disease Twice in my herd have I seen the very things here stated happen. Pigs that were farrowed in cholera were again exposed without an outbreak. It will not do to explain this away by saying it was to happen so.

I believe in this fact lies the keynote to the situation. I believe that a constitutional effect, imperceptible as it is, has been produced by inhaling and taking germs into the systems of pigs that renders them absolutely impervious to future attacks of the disease. At least this has been my experience. This much, I say, is good; good because by a knowledge of it we are often enabled to take advantage of it and have our pigs safely immuned. Here is food for the thoughtful and a pointer for further investigation.

If it is true that a constitutional effect is produced as stated above, may there not be a means perfected by which a like constitutional effect may be produced by artificial means which will render immunity. My experience in trying to immunize my pigs with the means furnished has not been altogether satisfactory. Perhaps this comes from want of a more thorough knowledge of how to use the means at hand; being over-anxious, too much has been done; impressions and effects have been produced which check growth and cause loss. In this respect I say it is bad.

Here, gentlemen, to me is where the shadows and clouds appear; where there is uncertainty and doubt about the constitutional effects produced with the means furnished. Whether they are a facsimile of those produced by the pig being farrowed in cholera, or the effect of some poison. Until this question is settled we are virtually in the dark at this point.

The theory of immuning pigs in utero or through lactation seems plausible, but further investigation must be had by which the means may be developed in which there is uniformity of strength and action, so that injury to pigs may be avoided.

If the serum treatment given to us by our friend Ridgeway will immune or destroy that particular element of the system upon which the cholera germ subsists, then nothing but such an article should go into the hands of anyone. We must know what we are doing and how we are doing it.

It has not been my privilege to test pigs treated by the serum process, therefore can not speak of its efficacy from experience.

CHEAPEST FOOD FOR HOGS.

WALKER S. JOHNSON, NEW AUGUSTA, IND.

Mr. President and Gentlemen of the Indiana Swine Breeders' Association—The subject assigned me, "Cheapest Feed for Hogs," is no doubt the most important subject confronting the breeder at this time.

We are all aware of the fact that the coming year bids fair to be one of the most successful in the way of a strong demand for breeding stock that we have ever experienced, but in order to make a financial success of it we are confronted by the subject assigned me, "Cheapest Feed for Hogs."

Now for me to say any certain kind or kinds of feed would be cheapest would be saying too much, for what would be cheapest in one locality might not be in another; therefore I do not think any practical rule can be laid down. But in our own State I would recommend the following, and will say in our own herd, for winter, we use rye pasture with a small amount of corn night and morning, when one can let them on rye, and in summer we allow our entire herd the run of a clover pasture as near as possible. For soft feed for our brood sows and breeding males we use one part corn, one part oats and one part bran. The corn and oats are ground together and ground fine. To this we add the bran and pour boiling water over the amount we use at one feed. This we feed twice daily and as soon as our pigs are old enough to eat, to the above we will add one part ground rye. This mixture of feed I not only think just as cheap as any other but much better for breeding stock than too much corn.

I may be digressing just a little from my subject, but I do want to say this, that this year we will find the pig trade will be late; very few pigs will be sold until new corn is in sight. Therefore I am of the opinion it will be just as good for the pigs and much cheaper to not feed our pigs very heavy until now corn comes.

Some will say this will not do for the reason the pigs will never develop right, but I think a great many have observed it is not the earliest developed pig that makes the best hog, but the moderately fed pig that developes into the best yearling. I can call to mind several of the best hogs that ever graced a show ring that were scarcely noticed (even by their breeder) until they were six months or even older.

THIRD ANNUAL MEETING

OF THE

Indiana Corn Growers' Association.

ADDRESS OF PRESIDENT A. O. LOCKRIDGE.

Gentlemen: The Indiana Corn Growers' Association meets this year without having passed a prosperous season. The severe drouth which prevailed all over the country has left us without much of a stimulus in corn culture. Nevertheless, I know we shall have some very interesting discussions today in the cultivation of this very important cereal. I trust there will be no formality here, but that all will feel perfectly free to join in the discussions.

If you will cast your eye over the map of the world and learn the countries most favorable for the culture of corn, you will be struck with the comparatively limited area adapted to the growth of maize. The wheat producing regions are far more numerous. In the United States the most favored region for the cultivation of Indian maize is here in the great Mississippi Valley. It is, therefore, something for congratulation that your farms lie within the heart of this corn belt.

With the innumerable uses to which corn is put its cultivation becomes of the first importance. We talk now about the breeding of corn with the same meaning that a few years ago we began to talk about the breeding of Short-horn and Hereford cattle. Expert corn breeders have selected a good type of this cereal and upon it have built some excellent standards.

But we must not be content to rest upon our present status of success. With our fine soil and its rich store of plant food thoroughly known, we must press on to still greater victories in the culture of corn. The work of today in this Association will, I have no doubt, greatly conduce to this important consummation.

LETTER OF GOVERNOR W. T. DURBIN.

Mr. Chairman and Gentlemen: Having been called away on a mission that necessitates my absence from the capital during your sessions, I adopt this means of communicating a welcome to the Indiana Corn Growers' Association, which I assure you is no less cordial than if I were permitted the pleasure of being with you in person.

All thoughtful men are beginning to realize in far greater measure than ever before that corn culture in Indiana is a matter of supreme importance in our industrial development, and upon the success of this staple general prosperity in our State depends largely. For various reasons, the growing of wheat in some sections, heretofore productive, has retrograded, and in nearly every section the raising of corn is gaining precedence over all other cereals. This is due, in some measure, to climatic conditions, but in larger measure, perhaps, to changed conditions which now seem to insure greater demand and consequently higher prices for corn and corn products. The erstwhile vast expanse of Western ranges is gradually being circumscribed by the onward march of civilization toward the west, and free-grazing lands will soon be numbered with the things of the past. Meantime the demand for animal food products is becoming larger, and intelligent farmers in Indiana and elsewhere realize that corn is inevitably destined to become more and more valuable as food for cattle, hogs and other domestic animals, not to mention its increasing use as an article of table consumption in its original state. The year 1901 was an exceptionally unfortunate one for corn growers generally, but on the whole, no other crop, I believe, is so reliable. The area of corn in Indiana in 1900 was 4,005,766 and the yield 169,926,921 bushels. As a source of revenue this is an item of great magnitude, almost incalculable for the reason that the original product, as measured and valued by bushels, confers other inestimable blessings. We are favored with a soil admirably adapted for the raising of grain, but, however rich in that respect, we must have a care that the favor is not abused. The best land will not last forever nor for a long time, as a producer, unless it has that attention nature intends and requires. The phosphates and other forms of plant food must be nourished and husbanded if we expect continued good results; otherwise the time will come when there will be barren and deserted farms in Indiana, as they now exist in large number in some of the Eastern States where land has been "worked to death" by plodders who were content with results of the day, with no thought of the future. The rotation of crops is one of the helpful factors for the protection and perpetuation of a fertile soil; the raising of corn and domestic animals is another potent agency to the same end. The "feeder" can easily calculate the benefits to be derived from stock-raising, and instead of being a seller of corn, he is learning more and more of the good that comes of so disposing of it that it is returned to the soil to renew it and strengthen it perpetually. The price of Indiana land has advanced at rapid strides during the past few years, and the cause is easily traced to the added importance that has attached to corn culture. The market value of this cereal, until recently, was much given to radical fluctuations, but it now seems to have established a standard that may be accepted as a reasonably safe guide as a basis for calculations

In conclusion, I congratulate you on having formed this association for the advancement of interest in corn-growing in Indiana We are living in an age of progress, of intelligent, practical methods, and the good work in which you are engaged will redound not only to your own credit and prosperity, but likewise to the profit of succeeding generations.

CORN CULTURE AND BREEDING.

BY A. D. SHOMEL, ILLINOIS EXPERIMENTAL STATION.

THE IMPORTANCE OF FERTILE SOIL.

The important points under the farmer's control in the production of a profitable crop of corn are fertile soil, improved seed, and the best methods of culture. By "farmer's control" is meant that the corn grower can influence the above conditions so that they may be made to produce the largest yield of corn per acre most economically. The fertility of the virgin soils seemed almost boundless to the pioneer farmer. He planted crop of corn after crop of corn, or crop of wheat after crop of wheat, or rotated corn with wheat, producing large yields of both crops. Little attention was given to the application of the principles of plant growth to our farm crops. In Indiana and Illinois such systems of farming have reduced the fertility of the soil to such an extent that profitable crops can no longer be produced on the old haphazard manner of farming. The early settlers broke the prairie sod or cleared the timber fields and cropped them until they would no longer produce profitable crops. These farmers then moved into a new spot, broke the sod or cleared the timber, and farmed as before. Sooner or later in any State the new and unbroken fields will all be plowed and cultivated. In Illinois, the children of the pioneers are being crowded back onto the exhausted fields, and it is their problem to find some practical way of restoring the fertility to the soils. Any farming community which practices a one-crop system of farming is found to eventually become poverty stricken. The fertility of the soil is like a bank account. By continued drafts without any deposits the balance will sooner or later be found on the wrong side of the ledger. At the Illinois Experiment Station corn has been grown year after year on a field of the college farm without any application of manures or fertilizers of any kind. This experiment was begun twenty-four years ago, and the best kind of cultivation and method of preparing the seed bed have been used in the growing of the crops. The crop has been carefully weighed from year to year. The yields have been kept since 1888, but previous to the establishment of the experiment station at this time no authoritative records were kept. The records since 1888 are as follows:

	Ear Corn, Bushels Per Acre.	*Stover, Tons Per Acre.*
1888	60.13	1.26
1889	47.15	1.21
1890	41.87	1.19
1891	26.67	1.23
1892	30.92	.75
1893	21.73	1.04
1894	34.83	1.26
1895	63.81	1.51
1896	62.31	1.74
1897	40.10	1.61
1898	18.11	1.39
1899	50.09	1.61
1900	48.03	1.29
1901	23.65	1.14

In other words, in 1901 it cost 50.6 cents per bushel to raise the crop. It is a noticeable fact that the yield per acre has decreased gradually on this field. The appearance of the soil has been changed. It is a clayish-white color compared to the rich black color of the adjoining rotated fields. The yield varies with the season, but is less than half that of rotated fields or the ordinary fields of the station farm with similar original conditions of soil fertility. There is a marked similarity between these results and the results of continuous wheat growing for fifty years on the Roodbulk fields of the Lawes and Gilbert experimental farm in England. Continuous cropping and taking the crop off the field exhausts the fertility of the soil, and it has been found that soils so treated are very difficult to bring back to their original state of fertility. The mechanical, as well as the chemical, condition of the soil is changed, and it requires many years of careful and expensive treatment to renew soil productiveness.

This is found to be the case in ordinary practice, and the problem before every corn grower is to keep up the fertility of the soil so that it will continue to produce profitable corn crops. Here are several practical methods for accomplishing the desired results, which will be treated briefly in this discussion:

One of the most important ways of getting the soil in good condition for the corn crop is by means of the leguminous or "cover crops;" e. g., cowpeas, clover, and alfalfa. The soja bean and cowpeas crops have been found to be especially beneficial to the soil, valuable as feeds, and successfully grown under widely differing conditions. In Illinois and Missouri these crops grown in the fields for a single year have been found to increase the yield of corn from five to eighteen bushels per acre. The hay has been found to be at least as valuable as ordinary red clover hay and the crop is harvested in much the same way. As the land becomes more and more exhausted, it becomes more difficult and expensive to secure a stand of ordinary red clover. Where alfalfa can be grown, this crop is very valuable for preparing the soil for corn. In most seasons, cowpeas and soy beans, drilled between the rows of corn just after the last cultivation, give good results. These crops will produce from one to two and one-half tons of hay per acre and will increase the fertility of the soil. Where the soil is a rich prairie loam the soy bean is more successful than the cowpea. On such rich soils the cowpea runs to vines and does not mature a seed crop. It is in such soils that the soja bean gives the best results. The rich soils stimulate the production of plant and seed, and the crop becomes increasingly valuable. The soja bean is easily harvested, but great care must be taken to secure good seed.

If the clover crops are grown and rotated with corn and the crops taken from the fields, the soil will eventually become exhausted. These leguminous crops add to the supply of nitrogen in the soil, but they do not add the other elements of fertility, particularly potash and phosphorous. With continuous cropping of any kind the fertility is bound to run out eventually. The only way by which corn growers can continue to grow profitable crops is by feeding the corn and hay crops to live stock and returning the manure to the soil. There is no fertilizer as valuable as barnyard manure, and it is only by the careful conservation of the manure from the corn and other crops, and its judicious application to the fields, that the soils will continue to produce profitable corn crops.

IMPROVED SEED CORN.

The second important feature of the growing of a corn crop is seed corn. It has been found that corn can be bred like cattle. From the fact that we secure a complete crop in a single season, the results from corn breeding are secured more quickly than from animal breeding. It costs no more to grow a large crop upon the field than a small crop. The expense of cultivation, interest on investment, and labor are the same in both cases. If by breeding the yield can be increased five bushels per acre, this increase is pure profit to the grower. Therefore any advantage from breeding is of very great importance to the farmer.

DEVELOPMENT OF CORN BREEDING.

Previous to 1897 little was done in the way of systematically breeding corn. Some few men early in the past century realized the far-reaching importance from well bred seed and began crude attempts at improving their strains of corn. One of these men, J. S. Leaming, of Wilmington, Ohio, through selection so changed and improved the type of corn grown on his farm that other farmers began to secure his seed corn for their use. This work was begun, according to his son's account, about 1825, and as a result this type of corn was brought west to Illinois and rapidly became popular with Western corn growers. In Ohio the corn was a tapering, short-eared type with particularly large butts. When the corn was brought west, the ear was lengthened by careful selection, the shape changed from the undesirable tapering to a cylindrical shape, and the enlarged butt bred out of the ears. The improved Leaming bears little or no resemblance to the original Leaming; the smooth kernels have been replaced by rough, deep kernels, and the whole type of the variety has been changed through less than fifteen years selection by Western breeders. The valuable results from such a long period of attention to selection is found in the fact that in the comparative test of varieties at the Illinois Station, since its establishment in 1888, the Leaming variety stands at the head of the list of the many varieties tested in yield per acre. Another pioneer in this work was James Riley, of Thorntown, Indiana. Mr. Riley was a live stock breeder of high standing, and, applying the same principles to the production of corn that he used so successfully in the improvement of his breeds of live stock, developed an improved variety of white corn. He began selecting seed from the ordinary white corn grown in Indiana at that time, and by giving particular attention to the weeding out of barren stalks and other undesirable types in his seed fields succeeded in producing a type of improved corn which he called the Boone County White. This type was determined upon about 1875, and by continued selection from year to year it has been improved, until at the present time it is the most popular variety of white corn grown in Indiana and Illinois. At the Illinois Station the variety outyielded all other varieties of white corn in the comparative tests.

The fact of the matter is, that careful breeding and selection results in more profitable types of corn. The valuable results from improved breeds of live stock have increased the wealth of the American farmer millions of dollars. The results from improved breeds of corn indicate that we may obtain equally valuable results from highly bred varieties of corn.

AMOUNT OF BARREN STALKS IN FIELD.

By careful count made in various counties in Illinois for the last three years, it was found by the farmers that almost one-third of the stalks in the field were barren. These barren stalks are weeds of little or no value to the farmer. They probably take nearly as much fertility from the soil as the stalks bearing ears, and they cost as much to grow as the fertile stalks. On the 137 farms of the Sibly Estate, Ford County, Illinois, it was found that nearly 30 per cent. of the stalks were barren. On this estate especial attention has been given to seed selection, and the probabilities are that the corn on these farms is more free from this condition than the average farm.

By looking over the corn in the cribs in any of the corn sections of the United States, a very small proportion of uniform perfect ears are found. The majority are weak in some particular, as in shape of ear, filling out at butts and tips, depth and shape of kernel, purity of color, and other points. That the average quality of corn is very poor is shown by the average yield per acre. The average yield per acre in the great corn states according to government statistics is about thirty bushels per acre. If every stalk in a hill produced a well developed ear, at the average width of planting, three feet six inches by three feet six inches, with only two stalks in a hill, the yield would be about one hundred bushels per acre. As a matter of fact, the average number of stalks per hill is more than two. How can we account, then, for the difference between one hundred bushels per acre and the actual yield of about thirty bushels per acre? This difference must be due to the fact that every stalk does not produce an ear and that the majority of the ears that are produced do not become well developed ears.

CORN BREEDERS' ORGANIZATIONS.

In view of these facts a few extensive corn growers organized the Illinois Seed Corn Breeders' Association in 1900. The object of this organization is to systematically improve, through co-operation with the State Experiment Station, the breeds of corn in this State. Following is presented the constitution of this organization with the idea that it may be adapted to Kansas conditions and needs in the taking up of this important work in corn breeding:

CONSTITUTION.

Article I—Name and Object.

Section 1. The name of this organization shall be "Illinois Seed Corn Breeders' Association."

Sec. 2. The object of this association shall be:

First. To establish distinct types and breeds of corn.

Second. To encourage and promote the growing of pure bred corn for seed purposes throughout the State of Illinois.

Third. To establish a bureau of inspection of the product grown by corn breeders, and furnish certificates of type and breed to the grower.

Fourth. To protect the farmer who shall desire to purchase pure bred seed corn by furnishing information such as will instruct him in distinguishing the breeds of corn and giving him the names of the reliable growers.

Fifth. To aid in procuring of such legislation or in doing any other acts as shall protect the growers of pure bred seed corn in their efforts to furnish the farmer with seed corn of the breed desired.

Sixth. To establish a score card for each recognized standard variety of corn

Article II—Membership.

Section 1. The members of this association shall consist of those persons engaged in the growing of pure bred corn on land worked by themselves, or under their control during the preparation of the soil, the planting, cultivating and harvesting of the crop. All applicants for membership must have been growers of corn for at least three years.

Sec. 2. The members of this Association shall be elected by the Board of Directors.

Sec. 3. No firm or corporation shall have more than one vote in the Association on any subject.

Sec. 4. The initiation fee of this Association shall be ten dollars, payable to the Treasurer within thirty days after notification of acceptance of application for membership. The annual dues shall be five dollars per annum and shall be paid to the Treasurer on or before the first day of September of each year. When not so paid, name of any such member shall be dropped from the roll of membership and can not be reinstated except by vote of the Board of Directors and payment of all arrears,

Article III—Management and Officers.

Section 1. The affairs of this association shall be managed by a board of five directors. Such directors shall be elected by ballot at the annual meeting of the Association to serve for the term of one year. The Dean of the College of Agriculture of the State of Illinois shall be an ex-officio member of the Board of Directors in addition to the five directors above provided.

Sec. 2. At the close of the annual meeting the Board of Directors shall immediately convene, and from their number shall elect by ballot one President, one Vice-President, and one Secretary-Treasurer to serve for one year.

Sec. 3. The President shall preside at all meetings of the Association and of the Board of Directors, shall appoint all special and standing committees to be approved by the Board of Directors. He shall make an annual report to the Association at the annual meeting, which closes the term for which he was elected, and shall in said report make such recommendations to the Association as may seem to him expedient.

The Secretary shall attend the annual meeting and all meetings of the Board of Directors. All books, records and certificates and seals shall be in his custody and shall be open to inspection of any member of the Association at any reasonable time. He shall give due notice of all meetings, both of the Association and of the Board of Directors; shall notify all members of their election; shall conduct the correspondence of the Association, and shall make an annual report.

The Treasurer shall collect all initiation fees and dues and give receipts for same to members; he shall keep all such moneys safely and shall pay out such money only upon order of the Board of Directors, properly countersigned by the President, and shall make an annual report of his receipts and disbursements, and reports at other times, as may be required by the Board of Directors.

Sec. 4. The location of the office of the Association shall be designated each year by the Board of Directors, and shall be announced at the closing session of the annual meeting for that year.

Sec. 5. The Board of Directors shall meet as often as the management of the affairs of the Association may require, not to exceed four times each year, including the annual meeting. And the Board of Directors shall select a competent person as inspector of the breeding of corn, whose duty it shall be to carefully inspect and record the variety, the type and breed, and the number of bushels of the corn grown by each member of the Association who desires to enter such corn for sale for seed. The compensation for such inspector to be determined by the

Board of Directors and payment made out of the money received for initiation fees and dues in the hands of the Treasurer. No officer of this Association shall receive any salary; the actual outlays made by the Secretary and Treasurer for printing and postage shall be paid out of funds in the hands of the treasurer upon order only of the Board of Directors, countersigned by the President.

Article IV—Annual Meeting.

Section 1. The annual meeting of this association shall be held at such time and place as may be determined by the Board of Directors. The arrangements and program of the annual meeting shall be in the hands of the Board of Directors. A majority of the Board of Directors present at any directors' meeting shall constitute a quorum for the transaction of business, and a lesser number in either case may adjourn to some subsequent named date.

Sec. 2. Vacancies in any office can be filled by a majority vote of the Board of Directors.

Sec. 3. This association may have an official seal and certificate which shall be in the custody of the Secretary. The seal shall be in form thus: Each member shall be entitled to receive a certificate of membership bearing this seal and signed by the President and Secretary. Members of the association shall be entitled to print or engrave upon their business stationery the words: "Member of Illinois Seed Corn Breeders' Association."

Every member of this association upon ceasing to be such member from any cause whatsoever shall forthwith surrender his certificate of membership to the association, and shall discontinue to use or display upon his business stationery or elsewhere the words: "Member of Illinois Seed Corn Breeders' Association."

Article V—Resignations and Expulsions.

Section 1. Any member of this association may at any time resign therefrom in writing, upon payment of all sums due the association and surrender of the certificate of membership.

Sec. 2. If any person, firm or corporation, a member of this association, shall at any time be deemed guilty of any act which is prejudicial to this association or to the purposes for which it was formed, or shall violate any of the rules and regulations thereof, such person, firm or corporation shall be notified of the charges against him or it, and to appear personally before the Board of Directors at a time and place to be specified, not less than thirty days from the date of such notice, and shall then and there be given a hearing. A majority vote of all the directors may expel such member from the association.

Sec. 3. Upon expulsion of a member the Secretary shall, upon the order of the Board of Directors, notify the agricultural press and farmers as far as possible that such member is no longer a member of the association.

Article VI—Rules and Regulations.

Section 1. This association may adopt such rules and regulations to secure the objects of the association as it may deem fit. Such rules and regulations may be amended or repealed at any annual meeting or any special meeting called for that purpose. This constitution may be altered, amended or repealed only at the annual meeting and notice of application of such alteration, amendment or repeal must be in the hands of the Secretary with full text of such alteration, amendment or repeal at least three months prior to the annual meeting.

Article VII—Rules and Regulations.

Rule 1. No member of this association shall sell or offer for sale any corn for seed purposes except on the ear only, unless otherwise ordered by the purchaser.

Rule 2. No member of this association shall sell or offer for sale any corn for seed purposes other than is grown by himself or under his direction and for seed purposes, and the type, variety, and quantity must be reported to the Secretary of the association not later than the second Wednesday in December of each year.

Rule 3. Each member of this association shall conduct his business of corn breeding and selling of pure bred seed corn in such manner only as shall be for the elevation of the reputation of the association as a means of accomplishing the object for which it was organized.

Rule 4. Each member shall properly test the vitality of the seed corn he offers for sale and if less than 90 per cent. germinates he shall not offer it for sale.

As a result of the work of the breeders of this association, improved and carefully selected seed has been sent to the farmers of various sections of the corn belt. To show the results from such work a few instances will be cited in the following discussion:

A corn grower of McLean County, becoming interested in improved seed, secured enough well-bred seed to plant 80 acres. In this body of land there is almost 10,000 acres devoted to corn. On this field the yield per acre was within one-half bushel of twenty-three bushels more per acre than in any of the other fields of the farm. This corn grower has secured enough well-bred seed for the coming season to plant the entire corn land on the farm.

In southern Illinois another farmer secured enough improved seed to plant 120 acres. This field yielded 15 bushels per acre more than any other field on the farm or in the vicinity where the yield was obtained. This farmer paid $40 for the seed and figures that the net profit from the investment was $840, all of which was the result of planting improved seed corn.

STANDARD VARIETIES OF CORN.

At present there are seven recognized varieties of corn—(white) Boone County White, Silver Mine, and White Superior, and (yellow) Leaming, Riley's Favorite, Reid's Yellow Dent, and Golden Eagle. The varieties will doubtless be added to in the near future as the types are grown under different conditions of soil and climate.

METHODS OF CORN BREEDING.

The system of breeding is as follows: The variety must be kept pure and free from all mixture. This is a difficult problem in most cases, because the pollen will drift at least eighty rods. The breeding must therefore be done where the breeding field can be protected from other cornfields, as by hedges, timber, or other natural barriers to pollen drifting, or in a very large field of the same variety that is being bred. This last plan has been used with good results in developing sweet corn varieties, but it is not so quick in results as the plan of isolating the breeding fields. This is due to the fact that if the breeding field is located where it will be pollinated by the pollen of inferior stalks, even of the same variety, this fertilization will be detrimental to the development of the variety and the weeding out of the unfavorable types. A field of about an acre in size of the best corn land is selected. The character of soil is of extreme importance. The placing of the breeding plot in a poor soil a single year may destroy the work of many years careful breeding. The land should be carefully prepared according to the best method of fitting the seed bed in that locality. The plan is to plant each ear by itself in this field either in plots ten hills square or in a row. The plot and row systems are both being used by corn breeders and it will take several years to demonstrate the most successful plan. For simplicity, the row system will be described, and the same principles will apply to the plot as to the row plan. Select thirty-two typical ears of the variety to be improved. This seed should be secured from some breeder of this variety, because he has accomplished what would take the beginner many years to develop. In other words, the corn grower can begin where the breeder left off. Lay out this acre with marker. Shell off the tips and butts of the ears to be used for seed, and plant three kernels in every hill by hand, covering with the hoe. Plant one row 112 hills long from each ear. Now cultivate ordinarily. As soon as the corn begins to tassel, go through the field three times, once every other day, and cut off or pull out the tassels of all stalks that have produced no shoots, all weakly stalks, and all suckers. These barren and poor stalks produce more pollen than the stalks bearing ears, and it is important that this pollen does not fertilize the future seed. The seed kernels will produce plants like the parents, and if one of the parents is weak the chances are that this weakness will crop out in some of the progeny. In Illinois this per cent. of barren stalks has been reduced from 62 per cent. to 12 per cent. in five years from such attention. In the fall the number of good ears should be counted in every row. The seed for the next seed field should be selected from the five rows producing the largest number of good ears. The prepotency in the seed for the production of this improved type can thus be taken advantage of and the undesirable types weeded out of the variety. The rest of the field can be used for general planting.

Following is an outline of the above described field:

....Ear 1
....Ear 2
....Ear 3
....Ear 4
....Ear 5
....Ear 6
....Ear 7
....Ear 8
....Ear 9
....Ear 10
....Ear 11
....Ear 12
....Ear 13
....Ear 14
....Ear 15
....Ear 16
....Ear 17
....Ear 18
....Ear 19
....Ear 20
....Ear 21
....Ear 22
....Ear 23
....Ear 24

....Ear 25
....Ear 26
....Ear 27
....Ear 28
....Ear 29
....Ear 30
....Ear 31
....Ear 32

TESTING VITALITY OF SEED CORN.

The vitality of all seed corn should be tested. A good, profitable stand can only be secured from vigorous seed. This vitality can be tested by every corn grower by this simple and practicable method: Take three kernels out of every seed ear--one from near the tip, one from the middle, and the other from near the butt of the ear. Fill an ordinary china dinner plate nearly full of sand and pour on water until thoroughly saturated. Now plant one hundred kernels point down in the sand. Place a second somewhat smaller plate over the first to prevent the too rapid evaporation of the moisture, and set in a warm room. Keep a record of the time and number of kernels sprouted in this kind of table:

Name of Variety..............................
Date of Testing..............................
Number of Kernels............................

Date.	Temperature.	Number Germinated.	Per Cent Germinated.
......	....	....	....
......	....	....	....
......	....	....	....
......	....	....	....
......	....	....	....

In seven days 97 per cent. should have germinated. If less, the seed should be discarded and better seed secured.

SELECTION AND STORING OF SEED CORN.

The seed should be thoroughly dry in order to keep the vitality unimpaired. A simple and effective plan in ordinary seed selection is to select the seed corn in the field. Tie a box to the rear of the wagon-box and when a particularly full ear is found on a well developed stalk, throw the ear into the box. A second selection can be made at the corn crib and the ears finally chosen for seed stored in boxes. These boxes should be thoroughly lined with screen wire drawn over the open top. This will prevent mice and rats from eating the seed, and will permit of free ventilation. Now set these boxes in an attic or other room provided with a stove and keep up fire or heat until the ears are thoroughly dried out. The old-fashioned plan of hanging up the seed ears by husks over the open fire was an admirable plan for effecting this result. After once dry the seed will not be effected by the extremes of temperature. In moist and immature kernels the cold freezes the moisture in the young plant and swells the cells, bursting the delicate tissue. If the seed is to be stored on an extensive scale, a special building should be prepared set on tile to prevent mice getting into the seed room. The ears should then be ricked up in regular order. A good plan is to lay them between 2 by 6 uprights and set the ricks several inches apart so that the dry air may circulate freely on all sides of the ear. A small stove will dry out the seed in two or three weeks continuous drying.

SELECTION OF EARS OF SEFD CORN.

In selecting the seed ears the object is to select such ears as will produce the largest amount of shelled corn. The grower is after corn, and it is with this idea in view that the seed must be selected. In the first place, rough ears of medium size with a large number of rows of kernels weigh out the most shelled corn. The rough kernel is the deep kernel, and with a large number of rows on the cob the greatest amount of corn can be crowded on an ear. This can best be illustrated by an actual weighing test of two different types of corn. In one instance an unimproved ear seventeen and one-half inches long with broad, smooth kernels weighed fourteen ounces; an improved ear of Boone County White, nine and three-fourth inches long and of about equal circumference to the long ear, weighed seventeen ounces. When shelled the long ear produced nine ounces of shelled corn, while the short ear yielded fifteen ounces of shelled corn. The deep kernel type actually outweighed the long, shallow type and there was a difference of six ounces of shelled corn in favor of the short ear. Applying this test to field conditions, providing there were two ears to the hill and an equal number of long and short ears, the improved short ear type would outyield the unimproved thirty-nine bushels per acre.

STANDARDS FOR VARIETIES.

The length of ear will vary with locality—the shorter the season the shorter the ear, and vice versa. In general, the ordinary type of corn should be between 10 and 11 inches in length and 7.5 and 8 inches in circumference. There is no objection to longer ear, providing it is proportional and will mature in the season in which it is grown. In fact, one of the objects of breeding is to develop size. With recognized varieties the standards of length, circumference and per cents have been adopted as follows:

Variety.	Length.	Circumference.	Per Cent.
Boone County White	10	7.5	86
Silver Mine	9	7	90
White Superior	10	7	88
Leaming	10	7	88
Reid's Yellow Dent	10	7	88
Golden Eagle	10	7	90
Riley's Favorite	9	7	90

These standards will be changed in the process of development but they tend to fix the characteristics at present. The roughness of kernel, color, etc., will vary with the variety. For the recognized varieties the following characteristics for the varieties have been adopted:

Name of Characteristic.	Reid's Yellow Dent.	Golden Eagle.	Silver Mine.	Riley's Favorite.	White Superior.	Leaming.	Boone Co. White.
Ear—							
Shape	Slowly tapering.	Slowly tapering.	Slowly tapering.	Slowly tapering.	Slowly tapering.	Slowly tapering.	Cylindrical.
Length	10 in.	9 in.	9 in.	9 in.	10 in.	10 in.	10 in.
Circumference	7 in.	7 in.	7 in.	7 in.	7 in.	7 in.	7.5 in.
Rows—							
Number	18–24.	16–20.	16–20.	16–20.	18–20.	16–24.	16–22.
Space	Narrow.	Medium.	Medium.	Wide.	Medium.	Narrow.	Narrow.
Arrangement	Pairs.	Pairs.	Pairs.	Pairs.	Rows.	Pairs.	Pairs.
Kernels—							
Shape	Wedge.	Broadwedge.	Broadwedge.	Med. wedge.	Broadwedge.	Wedge.	Wedge.
Arrangement	Diverging.	Diverging.	Upright.	Upright.	Diverging.	Upright.	Upright.
Color	Light yellow.	Deep yellow.	White.	Deep yellow.	White.	Yellow.	White.
Indentation	Med. rough.	Very rough.	Very rough.	Rough.	Rough.	Med. rough.	Med. rough.
Shank—							
Size	Small.	Medium.	Medium.	Small.	Large.	Medium.	Medium.
Cob—							
Size	Small.	Medium.	Small.	Small.	Medium.	Medium.	Medium.
Color	Red.	Red.	White.	Red.	White.	Red.	White.
Per cent. corn	88	90	90	90	88.	88	86

THE SCORE CARD.

In studying the seed corn the score card is a very useful helper, and the card adopted by the Illinois Corn Growers' Association is given here as a suggestion in the studying of the various points in an ear of corn according to their relative importance.

Name.	Perfect Score.	Explanation.
1. Uniformity..............	10	Uniform shape, size, color, indentation, type.
2. Shape of ears............	5	Cylindrical, partly cylindrical and tapering.
3. Color of ears.............	10	White kernel, white cob; yellow kernel, red cob.
4. Market condition	5	Soundness, maturity.
5. Tips of ears..............	10	Filled out with regular rows of kernels.
6. Butts of ears.............	5	Kernels swelled out around shank evenly.
7. Uniformity of kernel......	5	Uniform color, size, shape, type.
8. Shape of kernel...........	5	Wedge shape.
9. Space....................	10	Narrow, medium, wide.
10. Length............	10	Uniformity to standard for variety.
11. Circumference............	5	Uniformity to standard for variety.
12. Per cent. corn	20	Uniformity to standard for variety.

HILLING VS. DRILLING.

In a new country, the usual practice is to drill corn. With few of the noxious weeds, with abundant soil fertility, the farmer was able to put in more stalks in an acre than would be possible in hilled corn and the results were generally satisfactory. However, as the most destructive and harmful of weeds spread over the corn belt, it would be found difficult to get rid of them in drilled corn. As the excessive moisture was drained out of the soil by the continual cropping, the large number of stalks became detrimental, so that the tendency is away from drilling back to the old plan of planting in hills.

Many farmers contend that by stringing out the kernels in the row of drilled corn, that the stalk would produce better ears than in the hills. With the idea of trying to ascertain the fact, the Illinois Station carried on a series of experiments for several years. The experiment was so arranged that an equal amount of ground was given up to drill corn and hill corn. The same number of stocks in the hill were strung out in the row of drilled corn. The corn was all thinned after planting so that we secured an equal number of stalks in the drilled field as in the hilled field. The fields were kept free from weeds and the same cultivation given in both cases. The experiment was repeated with different soils, varieties of corn and season. As a result, we found in figuring up the average yields, there was less than a bushel difference in the yields of the drilled and hilled fields. Further experiments are in progress along this line, which will add to the interest of the experiment. But it is safe to say that there is little difference in yields in the two practices and that one system has little advantage over the other, up to four stalks in the hill. With improved seed it is not necessary to plant this number of kernels in the hill. In view of the great advantage of hilled corn, during cultivation, the evidence is largely in favor of the practice of hilling.

The depth of planting is another question, which varies with the soil condition. Corn can be planted deeper in a sandy soil, which draws out readily in the spring and warms up quickly, than in the heavier clay soil. The corn should be planted deep enough to secure sufficient moisture for the best germination, but not so deep that it will be placed in a cold wet soil where the kernel is liable to rot and decay and in any event, to protracted germination, which is injurious to the plant. No matter what depth the seed is planted, the roots branch out at about a constant distance from the surface. In ordinary prairie loam, the distance is between two and three inches. If the kernels are set down lower than this point, it sends out a root system which develops a tube-like structure, reaching to within two or three inches of the surface. At this point, the real root system branches out, the stem of the plant is sent to the air, and the first root system decays and is lost. Such a condition must result disastrously to the young plants and reduce the yield of the crop.

CULTIVATION OF CORN.

The cultivation of the corn crop must depend upon the condition of seasons, soil and the amount of weeds in the field. The cultivation of the crop is for the purpose of destroying weeds, conserving soil moisture, and aerating the soil. The weediness of the field will depend upon the work done on the seed bed. If the seed bed has been properly handled, preparatory to planting, most of the weeds will have been destroyed, so that the principal object of cultivation is that of conserving the soil moisture.

AMOUNT OF MOISTURE PER GROWTH OF CORN CROP.

At the Wisconsin Experiment Station, it has been found that it requires about 310 pounds of water to produce a single pound of dry matter. By figuring up the amount of dry matter in an 80 acre field of corn, and multiplying by 310, the pounds of water required to produce the crop will be secured. The result is astonishing.

It does not seem possible that such an enormous quantity of moisture can be secured by the corn plants during the growing season, and more important than all, this moisture in most part is used during June, July and August, the months of least rainfall in the year, so it can easily be seen that the conservation of the moisture in the soil is a most important problem, and one which must be tried by the corn grower.

CONSERVATION OF SOIL MOISTURE.

The Illinois Station conducted exhaustive tests of the comparative amount of moisture consumed by the different methods of cultivation. Two things we found to be true, first, that deep cultivation conserves soil moisture, and second, that frequent cultivation conserves the moisture most effectively, of all kinds of plans for cultivation. It was found that in deep cultivations, despite the excess of moisture, the yield was very low, compared to shallow culture. To find the cause of this an extensive series of experiments with the pruning, or cutting off the root, of corn plant was conducted.

EFFECT OF ROOT PRUNING.

In this root pruning experiment, a field of corn was selected and one row was root pruned two inches deep. This root pruning was done with a broad, sharp spade. The spade was set down about six inches from the stalk of corn in the hill on every side of the hill. The spade was pushed down into the soil and a guard allowed it to penetrate just to the depth planned for in the experiment. The whole field was cultivated with a weeder and all weeds not removed in this way were cut out by hand. This was done so that the rows of corn would receive equal cultivation and be under like conditions. The pruning was done three times in the season at about the ordinary times of cultivation. The second row was not pruned and the third row was pruned four inches deep. The fourth row was not pruned, and the fifth row was pruned six inches deep. This was repeated until a large field was treated in this manner.

The resulting yields were as follows for three seasons:

Not pruned	60 bu. per acre.
Pruned 2 inches deep	60 bu. per acre.
Pruned 4 inches deep	45 bu. per acre.
Pruned 6 inches deep	30 bu. per acre.

In fact, these and all other similar experiments simply prove that any injury to the roots of the plant reduced the yield. The amount of the reduction was about in proportion to the number of roots cut off. This experiment explains the reduction of the yield of deep cultivation.

FREQUENT CULTIVATION.

The best results of experiments and from practical experience is to the effect that continued cultivation, keeping a loose mulch on the surface of the soil, gives the best results. The general practice coming into vogue among the most progressive and successful corn growers is after the corn reaches a height to interfere in cultivation with the ordinary two-horse cultivator, to work a single horse with a five tooth harrow or drag, and cultivate between the rows of corn during the setting of the ears on the stalks. The yields per acre of 100 bushels have been secured by this plan, and experience has proven it to be a practical and successful plan on a large scale. Of course, if there is plenty of rainfall such precaution is not necessary.

METHODS OF CULTIVATION.

A test of a few of the different methods of cultivation in use at present, resulted as follows:

Weeds allowed to grow	58 bushels per acre.
Weeds cut out with hoe and a loose mulch made with hoe	90 bushels per acre.
3-inch deep cultivation, small shovels	90 bushels per acre.
4-inch deep cultivation, small shovels	91 bushels per acre.
6-inch deep cultivation, small shovels	84 bushels per acre.
6-inch deep cultivation, large shovels	87 bushels per acre.
Colpher or blade cultivation	88 bushels per acre.
Deep early and shallow late	85 bushels per acre.
Shallow early and deep late	89 bushels per acre.
Mulch with grass	88 bushels per acre.

The weeds must be kept out at any cost, and if they have not been removed before the crop appears, they must be destroyed. The kind of cultivation will depend upon the local condition, but the implement that stirs the soil and leaves a loose mulch, destroys the weeds, avoids root pruning, will give the best results under all circumstances.

UNIFORMITY.

In selecting seed corn, they should be of uniform size, shape, color and indentation. A uniform product is the result of good selection and breeding, so that it is very important that the ears be uniform. The variety type should be strong. If Boone County White variety, the characteristics of Boone County White variety should be well developed. This is one of the most important points connected with the study of seed corn. It is impossible at present to describe these points so that the student may become familiar with the variety type without actual study of the varieties.

SHAPE OF EARS.

The shape of the ear should be cylindrical. This cylindrical shape carried from the butt to the tip of the ear means an even, regular, deep kernel, resulting in a large per cent. of corn to cob. In tapering ears, the kernels become irregular at the tip, some of the rows are lost, and the proportion of corn to cob becomes small. This type is undesirable for every purpose. The rows of kernels should run parallel with the cob, straight and regular. If some of the kernels are not filled out, the adjoining kernels swell out into irregular shapes in an effort to occupy all of the space. In shelling the ears for seed, the irregular kernels in the butts and tips of the ears should be shelled off and discarded.

COLOR OF EARS.

If a yellow corn, the cob should be deep red, and a white corn, the cob should be pure white. In the present standard varieties the color has not been given particular attention and is frequently not pure. This mixing of color indicates mixing of varieties, which is injurious to the development of improved varieties. Mixture between white and yellow varieties is indicated by a white cap in the yellow ears, and a yellowish cast to the flinty portion of the kernel in the white ear.

MARKET CONDITION.

The ear should be sound and firm. This indicates that the ear has fully matured and dried out in the season in which it was grown. If the ear is loose, the kernels shrivelled, it indicates that the ear is chaffy and has not fully matured under the conditions where it was grown.

TIPS OF EARS.

The tips should be filled with regular rows of kernels, so that no point of the cob projects beyond the kernels of corn. Poorly filled out ears indicate a small proportion of corn to cob and poor selection. By selecting well filled out ears, the maturity of the different parts of the ear is brought to the same season, so that the pollen produced by a variety will be sufficient to supply the entire ear on all of the stalks in the field.

BUTTS OF EARS.

The butt of the ear should be filled out about the shank, so that a medium-sized shank will be produced. It has been possible to make the kernels in the butt fill out to such an extent that the shank has been crowded so small that it will not support the ear on the stalk. On the other hand, a big, poorly filled out butt is usually accompanied by a large, coarse shank, difficult to break in husking and an unusual amount of husk in proportion to the size of the ear. In such ears fungous diseases, as dry rot, frequently develop in the ear of corn.

UNIFORMITY OF KERNEL.

The kernels should be of the same shape, size and color, and should be of the type of the variety. To study kernels, take out the kernels from about one-third the distance from the butt to the tip and lay beside the ear.

SHAPE OF KERNEL.

The best shape of kernel is a wedge. This shape will permit of the largest number of rows of kernels on cob. This shape is the result of breeding and makes possible ears with twenty to twenty-four rows of kernels and a large per cent. of corn. The kernel is the unit of the ear, and great attention should be paid to the development of the kernel.

SPACE.

By space between rows is meant the furrow between the tops of the rows of kernels. It indicates a reversion to the original shallow kernel type of corn, which is unprofitable to the present day corn grower. There should be no space, and with the improved types of kernels there is no space on the ears.

LENGTH.

The length will vary with the variety. In general, a good ear of corn is about between 10 to 11 inches in length. Measure the length from the extreme butt to tip.

CIRCUMFERENCE.

The circumference will vary with the variety. It should be measured at about one-third the distance from butt to tip of ear. In ordinary corn 7.5 inches to 8 inches is the circumference proportional to the ordinary length of ear.

PER CENT. CORN.

The corn grower produces the corn for the actual amount of shelled corn produced. With the rough, deep kernel type with a large number of rows of kernels on the ear, all available space being taken up with corn, the per cent. is greatest. Hence such corn is the most profitable to grow. To find per cent., weigh the ear, shell the corn and weigh the shelled corn. Divide the weight of the shelled corn by the total weight of the ear, and the result will be the per cent. of shelled corn. This per cent. will vary with the variety, but in general it is about 88 per cent. A large enough cob to support the rows of corn is needed, and this per cent. of corn represents about the proportion which will give the best results.

SELECTION FOR QUALITY.

The composition of the corn kernel is of great importance to the feeder, stockmen and glucose factories. If the per cent. of protein can be increased by breeding, the corn becomes the more valuable feed for live stock. It is brought nearer a balanced ration, in other words, and is of great importance to stockmen. The composition of the kernel can be varied by breeding through selection of seed, as proved by experiments of the Illinois Station, since 1896. The variation in the crop is shown by the following table quoted from the work of the station. The table further shows that the proportion of oil may be increased at the will of the breeder. This will be of tremendous importance to the glucose factories, where the corn oil is extracted on a commercial scale. Following is the table:

TABLE SHOWING INCREASE PROTEIN IN CORN BREEDING EXPERIMENT.

	Protein in Seed.	Protein in Crop.
1896		
1897	12.54	10.92
1898	12.49	11.10
1899	13.06	11.05
1900	13.74	11.46
1901	14.77	12.32

TABLE SHOWING INCREASE OIL IN CORN BREEDING EXPERIMENT.

	Oil in Seed.	Oil in Crop.
1896		
1897	5.33	5.70
1898	5.20	4.73
1899	6.15	5.15
1900	6.30	5.64
1901	6.77	6.12

The analysis of corn, showing average composition, is as follows:

Ash	Fibre	Oil	Protein	Carbohydrates
1.43	2.66	4.70	10.92	80.35

The composition of the kernel may be determined in part by simple mechanical examination. The proportion of hard flinty part of kernel to soft starch at the top of kernel indicates per cent. protein and starch. The size of the germ indicates the approximate proportion of oil. In selecting seed, it is a good plan to select ears having hard, flinty kernels, with good sized chit. These breeding experiments have proven that the amounts of protein, oil and starch may be varied by the corn breeder, either to increase or decrease any one of these elements of composition. The development of milk in the dairy breeds or the per cent. of sugar in the sugar beet indicates what may be accomplished in corn selection.

CULTURE.

The third important feature in the production of corn crop, is the culture, i. e., the preparation of the seedbed, kind of planting and cultivation. The preparation of the seed bed should be of such a nature as to furnish the requirements for germination of the seed corn, moisture, warmth and air. The depth and time of plowing, the floating, discing and harrowing of the seed bed, must vary with the soil and climate. However, the general principles of a thorough fitting of the soil, destroying the weeds before the corn is planted and the securing of a mulch to prevent the escape of soil moisture, are the foundations of successful corn culture.

DISTANCE APART OF HILLS.

In planting corn, the distance apart of the rows and the hills in the row is important. The general tendency is to bring the hills closer together and plant fewer kernels in the hill. Ten years ago, the ordinary width planter was at least 3 feet 10 inches, and varied to as wide as 4 feet 4 inches. To-day the most popular width planter is 3 feet 6 inches, varying to as narrow as 3 feet 2 inches. To show the reason for this bringing together of the rows, a 3-foot 8-inch planter will plant 3,240 hills in an acre. A 3-foot 6-inch planter, just two inches closer together, will plant 3,556 hills per acre, a gain of 316 hills. If these hills contain two well developed ears, this would mean a gain of nine bushels per acre.

NUMBER OF STALKS IN HILL.

With improved seed and planters, it is not necessary to plant a large number of kernels in the hill. The latest improved planters are so arranged that if set to drop two kernels in a hill, about 90 per cent. of the hills will be found to contain two kernels. With improved seed corn, at least 97 per cent. of the kernels will produce stalks, so that if two kernels are put in a hill, we are certain of securing two stalks. As the seed corn becomes more and more improved, we can depend on every stalk producing an ear. When this condition is secured, two stalks in the hill will produce as large a yield per acre as the soil can yield in a season, so that the evolution of the number of stalks per hill is toward less stalks to the hill, an average of about two stalks per hill, giving best results.

The following Standard of Perfection and general score card was formally adopted:

A perfect ear of corn should be from 10 to 12 inches long and 7½ to 8 inches in circumference. The ear should yield 88 per cent. of grain.

The ear should taper but slightly, approaching the cylindrical to near the point. It should be well filled out at both ends, with straight rows of wedge shaped grains.

GENERAL SCORE CARD.

1. Uniformity of exhibit	10
2. Shape of ears	5
3. Color of ears	10
4. Market condition	5
5. Tips of ears	10
6. Butts of ears	5
7. Uniformity of kernels	5
8. Shape of kernels	5
9. Length of ears	10
10. Circumference of ears	5
11. Space between rows	10
12. Per cent. of corn	20
Total	100

.... Judge.

The following officers were elected for the ensuing year:
President—Chas. B. Benjamin, Le Roy, Ind.
Vice-President—S. B. Clover, Franklin, Ind.
Secretary and Treasurer—H. F. McMahan, Liberty, Ind.

FARMERS' INSTITUTES.

REPORT OF SUPERINTENDENT.

Introductory.—The increase in the appropriation for Farmers' Institutes, voted by the General Assembly of 1901 became available in May of that year on the publication of the acts of said Assembly. This act placed $2,250 at the disposal of the Institute management for the balance of that year ending October 31st, 1901. This sum was expended in holding four District Institutes and a Women's Conference in August, and the State Conference of Institute Officers and Workers in October of that year.

Beginning with November 1st, 1901, $10,000 per annum became available for institute work. After mature deliberation and conference with many prominent institute workers and chairmen, it was decided to expend the increased appropriation largely upon Supplemental Institutes, the same to be held at outlying points, in the several counties, as nearly as possible midway between the places of annual meeting. Accordingly a series of supplemental Institutes was conducted in November, 1901, and another series in February and March, 1902, in addition to the regular series of annual Institutes. Seventy two-day supplemental Institutes were held in sixty-two counties; twenty-three one-day supplemental Institutes were held in eleven counties. Of the latter, twelve were special Dairy Institutes, attended by the Dairy Instructor of Purdue University.

Although some difficulty was encountered in arranging for supplemental meetings, owing to misunderstandings as to the real nature of the work, and to the inexperience of local officers, the supplemental Institutes were, on the whole, as successful as could be expected. In a number of instances they rivaled many of the annual meetings in interest, attendance and efficiency. A more detailed account of the year's work follows under appropriate headings.

DISTRICT FARMER'S INSTITUTES.

District Farmers' Institutes were held at Plymouth, Orleans, South Bend and Huntington. These were special in character. The first was a Dairy meeting, the second and third Horticultural meetings, while the fourth was for the benefit of farmers interested in the meat-producing animals of the farm. The character of the discussions will be indicated by the outline programs given below:

DISTRICT DAIRY INSTITUTE.

Plymouth, August 13-14, 1901.

PROGRAM.

10 a. m., August 13. Opening Session.

Music.
Invocation—Rev. W. E. McKinsey, Plymouth.
Music.
A Word of Welcome—P. O. Jones, Mayor of Plymouth.
Response—W. C. Latta, Superintendent Farmers' Institutes.
Dairying Promotive of Agricultural Prosperity—H. B. Gurler, Author "American Dairying," DeKalb, Ill.
Darying," DeKalb, Ill.
Discussion.
The Place of the Dairy in Indiana Agriculture—Prof. C. S. Plumb, Director Indiana Agricultural Experiment Station.
Discussion—Announcements.

1:30 p. m. Dairy Cattle.

Music.
Selection of Dairy Stock—Prof. C. D. Smith, Director Michigan Agricultural Experiment Station.
Rearing the Dairy Herd—H. B. Gurler.
Discussion.
Care of Cows During Pregnancy and Parturition—Cal. Husselman, Dairy Farmer, Auburn, Ind.
Discussion.
Causes of Variation in the per cent. of Butter Fat in Milk—H. E. Van Norman, Dairy Instructor, Purdue University.
Questions and Discussion.

7:30 p. m. General Session.

Music.
Relation of Form and Function in the Dairy Cow, Illustrated—Professor C. D. Smith.
Music.
Why Farmers' Wives Like the Creamery—Mrs. J. C. Erwin, Bourbon, Ind.
Mutual Interests of Business Men and Farmers—Hon. J. W. Parks, Plymouth.
Music.
Informal reception in the court room, given by the business men of Plymouth.

9:30 a. m., August 14. Dairy Buildings, Appliances, etc.

Music.
Prayer—Rev. B. G. Upson, Plymouth.
Music.
The Cow Barn—Cal. Husselman.
Discussion.
The Silo: Its Cost and Construction—J. J. W. Billingsley, Dairy Farmer, Indianapolis, Ind.
Questions and Discussion.
Care and Delivery of Milk—A. S. Shalliol, Bremen, Ind.
General Discussion.

1:30 p. m. Dairy Feeds and Feeding

Dairy Feeding Rations—Prof. C. S. Plumb, Purdue University.
Questions and Discussion.
Summer Feeding—S. B. Woods, Dairy Farmer, Lottaville, Ind.
Discussion.
Producing a Balanced Ration on the Farm—Cal. Husselman.
Questions and Discussion.
Silage: Its Value, Production and Preservation—J. J. W. Billingsley.
General Discussion.
Suggested Topics for the Question Box:—
Skimming Stations. Hand Separators. Sweet Skim Milk. The Co-operative Creamery. Good Milk Without Ice. A Sanitary Dairy. Keeping Herd Records.

DISTRICT HORTICULTURAL INSTITUTE.

Orleans, August 20-21, 1901.

PROGRAM.

10:00 a. m., August 20. Opening Session.

Music.
Invocation—Rev. T. J. Shrole, Orleans.
Music.
A Word of Welcome—Johnson Monyhan, Orleans.
Response—W. C. Latta, Superintendent Farmers' Institute.
Symposium—Fruit Possibilities of Southern Indiana. Ten minute talks by:—
Judge Buskirk, Princeton, Gibson County.
Mr. Geo. P. Campbell, Bloomington, Monroe County.
Mr. Jonathan Beard, Edwardsville, Floyd County.
Mr. H. F. McMahan, Fairfield, Union County.
Mr. J. A. Burton, Orleans, Orange County.
Mrs. W. W. Stevens, Salem, Washington County.
Discussion—Announcements.

1:30 p. m. Conditions of Success in Fruit Growing.

Music.
The Man—S. H. Fulton, Superintendent Fruit Exp. Station, South Haven. Mich.
The Soil—C. M. Hobbs, President State Horticultural Society.
Discussion.
The Methods—Prof. E. S. Goff, Horticulturist, Wisconsin Exp. Station.
Discussion.
The Market—Jonathan Beard, New Albany.
General Discussion.

7:30 p. m. Educational Session.

Music.
The Farmer's Son—H. F. McMahan.
Questions and Discussion.
Music.
The Farmer's Daughter—Mrs. C. N. Lindley, Salem.
General Discussion.
Music.
Informal reception in High School Grove given by the business men of Orleans.

9:30 a. m., August 21. Tree Fruits.

Music.
Prayer—Rev. Gossard, Orleans.
Music.
Market Varieties—
  Apples and Pears—C. M. Hobbs, Bridgeport.
  Peaches, Plums and Cherries—U. M. Stewart, Madison.
Questions and Discussion.
Soil Fertilization—Prof. H. A. Huston, State Chemist, Lafayette, Ind.
Questions and Discussion.
Spraying and Spraying Mixtures—S. H. Fulton.
Discussion, led by Prof. J. Troop, Secretary State Horticultural Society.

1:30 p. m. The Apple and How to Grow It.

Music.
Soil and Site—Joe A. Burton.
Discussion.
Planning and Care of the Young Orchard—Edwin Yenowine, Edwardsville.
Discussion.
Care of the Bearing Orchard—W. C. Reed, Vincennes.

Discussion.

Pruning and Thinning—Prof. E. S. Goff, Madison, Wis.

General Discussion.

Suggested Topics for the Question Box—

Protecting the Orchard from Frost. Irrigation. Grass in the Orchard. Regular Bearing. Cold Storage. Fruit Packages. Grading for Market. Small Fruit.

DISTRICT HORTICULTURAL INSTITUTE.

South Bend, August 22-23, 1901.

(A union meeting with the State Horticultural Society.)

PROGRAM.

1:30 p. m., Thursday, August 22.

Music.

Invocation—Rev. P. J. Rice, Pastor Christian Church.

Music.

Words of Greeting—Hon. J. B. Stoll, South Bend.

Response—W. C. Latta, Superintendent Farmers' Institutes.

The Apple and Pear: Planting and Growing Them—S. H. Fulton, Superintendent Michigan Fruit-Testing Sub. Station.

Discussion.

Feeding the Trees—Prof. H. A. Huston, State Chemist, Lafayette.

Questions.

Forestry—Its Relation to Fruit Growing—Hon. Chas. W. Garfield, Grand Rapids, Mich.

Questions and Discussion.

7:30 p. m., Thursday.

Music.

Relation of Forestry to the Industries—Prof. W. H. Freeman, Secretary State Forestry Commission, Indianapolis.

Music.

Education for the Home-maker—Mrs. Virginia C. Meredith, Cambridge City, Ind.—Professor Home Economics, University of Minnesota.

Music.

Informal reception given in Annex by the business men of South Bend.

9:00 a. m., Friday, August 23.

Music.

Prayer—Rev. E. P. Bennett, Pastor First M. E. Church.

Music.

Our Native Plums—Prof. E. S. Goff, Horticulturist Wisconsin Experiment Station.

Questions and Discussion.
Care of the Peach Orchard—S. H. Fulton, South Haven, Mich.
Discussion.
San Jose Scale and Its Treatment—Prof. F. M. Webster, Entomologist, Ohio Experiment Station.
Questions and Discussion.

1:30 p. m., Friday.

The Top Notch Horticulturist—J. C. Kimmel, Ligonier, Ind.
Discussion.
Spraying and Spraying Mixtures—Prof. F. M. Webster, Wooster, Ohio.
Questions and Discussion.
Why Prune and Thin?—E. S. Goff, Madison, Wis.
General Discussion.
Suggested Topics for the Question Box—Cold Storage. Our Friends, the Birds. Small Fruits--"To Have and To Hold." The Outlook in Horticulture for Young Men.

DISTRICT STOCKMAN'S INSTITUTE.

Huntington, August 27-28, 1901.

PROGRAM.

9:30 a. m. Opening Session.

Invocation—Rev. M. L. Donahey, Pastor Presbyterian Church, Huntington.
Music.
A Word of Welcome—J. Fred. France, City Attorney.
Response—Prof. W. C. Latta, Superintendent Farmers' Institutes.
Necessity for Progress in Agriculture if We Are to Maintain Our Position as Agricultural Producers in This Country—Prof. W. A. Henry, Director Wisconsin Agricultural Experiment Station.
Questions and Discussion.
Improved Live Stock Essential to Enduring Agricultural Prosperity—Mrs. Virginia C. Meredith, Cambridge City, Ind.
Discussion—Announcements.

1:30 p. m. For the Breeder and Feeder.

Music.
The Importance of Good Blood in the Meat Producing Animals of the Farm—Prof. C. S. Plumb, Director Indiana Experiment Station.
Discussion.
Elementary Lesson in the Science of Stock Feeding—Prof. W. A. Henry, Madison, Wis.
Questions and Discussion.

Thursday Evening, 7:30 o'clock.

Music.

Symposium—Some Features of European Agriculture that Particularly Impressed Me—Prof. C. S. Plumb, Lafayette, Ind.; Prof. W. A. Henry, Madison, Wis.

American and European Homes—Mrs. Virginia C. Meredith, Professor Home Economics, University of Minnesota.

Music.

Informal reception in Opera House given by the business men of Huntington.

9:00 a. m. Sheep and Swine.

Discussion.

Prayer—Rev. T. M. Guild, Pastor M. E. Church, Huntington.

Music.

Up-to-Date Management and Winter Feeding of Sheep—H. P. Miller, Sunbury, Ohio.

Questions and Discussion.

Best Methods of Handling Swine—W. B. Anderson, Otwell, Ind.

Discussion.

Health of Flock and Herd—Dr. A. W. Bitting, Veterinarian Indiana Experiment Station.

Questions and Discussion.

1:30 p. m. Beef Cattle.

Shall the Small Farmer Try to Produce Beef?—H. H. Keim, Ladoga, Ind.

Discussion.

Results with Silage Fed to Beef Stock—Chas. Thorp, Medford, Wis.

Questions and Discussion.

A Plea for the Silo in Beef Production—Prof. W. A. Henry.

General Discussion.

Suggested Topics for the Question Box—Early Market Lambs. Rations for Young Animals. Co-operative Live Stock Breeding. Feeding Quarters for Cattle, Sheep and Swine. Producing a Balanced Ration on the Farm.

These meetings were highly specialized in character as will be seen by the foregoing programs. The purpose of these meetings was not only to instruct those engaged in the special lines of work in question, but also to awaken a more general interest in the lines of agriculture under consideration. As was expected, the attendance was not large, ranging from 150 to about 300. The interest in all these meetings was excellent, however, and it is believed that much good was accomplished in the way of emphasizing the importance and profitableness of specialization in agriculture.

WOMAN'S CONFERENCE.

A Conference of Women Institute Workers was held at Purdue University, Lafayette, Indiana, August 16, 1901. This Conference was informal in character. The following are the subjects considered by the Conference:

PROGRAM.

10:00 a. m.—Needs of Farmers' Wives and Daughters.
2:00 p. m.—What Can be Done for the Women of the Country:
  (a) By Farmers' Institutes.
  (b) By the Agricultural College.
Women's Auxiliaries—
  (a) What they may accomplish.
  (b) Their relations to Farmers' Institutes.
  (c) How they may be organized.
8:00 p. m.—Address: The Education of the Home-maker, by Mrs. Virginia C. Meredith, Cambridge City, Ind., Professor Home Economics University Minnesota.
Discussion.
Adjournment.

Those in attendance showed a keen interest in the subjects set for discussion. The time proved entirely too short for a full consideration of the subject of Women's Auxiliaries of Farmers' Institutes. By vote the Conference decided to recommend the organization of women's auxiliaries as a means of helping farmers' wives and daughters. There was some difference of opinion as to the methods of conducting these auxiliaries. Some believed that the women should hold separate sessions for the discussion of topics of peculiar interest to farmers' wives and daughters. Others held the view that unless it was necessary to divide the audience to accommodate the crowd, it would be better for the men and women to meet together, the latter taking charge of certain of the general sessions of the Farmers' Institutes. A very general desire was expressed for the employment of an Instructor in Domestic Science to discuss at Farmers' Institutes subjects in the line of homemaking, household management and domestic economy.

The evening session was thrown open to the public in order that all who desired might have the opportunity of hearing Mrs. Virginia C. Meredith, Professor of Home Economics in the University of Minnesota. Mrs. Meredith's address on the "Education of the Home-maker" was thoughtful, eminently practical, and very admirable, both in matter and in method of treatment.

Twenty-one counties were represented by this conference. The following is a list of the ladies attending:

Mrs. Oliver Kline, Huntington; Mrs. J. A. Walker, Huntington; Mrs. R. A. Hume, Plymouth; Mrs. Oscar Carter, Seymour; Mrs. Jennie M. Buckley, Delphi; Mrs J. W. Bates, Broad Ripple; Mrs. L. D. Creal, Angola; Mrs. Cal Husselman, Auburn; Mrs. Naomi DeVilbiss, Ft. Wayne; Mrs. E. H. Collins, Carmel; Mrs. Helen Barrows, Bicknell; Mrs. J. M. Bloss, Muncie; Mrs. Florence Ross, Southport; Mrs. C. N. Lindley, Salem; Mrs. W. W. Stevens, Salem; Mrs. Emma Anderson, Otwell; Mrs. Geo. Thomas, Rockport; Mrs. I. B. Calvin, Kewanna; Mrs. J. W. Mills, Lagrange; Mrs. Joe A. Burton, Orleans; Mrs. Virginia C. Meredith, Cambridge City; Mrs. W. L. Berryman, Tipton; Mrs. A. L. Smith, Princeton; Mrs. D. K. Jones, Boone Grove; Mrs. J. C. Erwin, Bourbon; Mrs. F. H. Turner, Orleans, and Miss Una B. Turley, Orleans.

INSTITUTE CONFERENCE, 1901.

The Fourth Annual State Conference, of the Institute Officers and Workers, was held at Purdue University, October 9-10, 1901. Eighty-one counties were represented by 168 registered at this conference. This exceeded any previous conference both by attendance and number of counties represented. The following is the program of the conference:

PROGRAM.

Wednesday, 10:00 a. m. J. P. Martin, Logansport, presiding.

Prayer—Rev. O. R. McKay, Pastor First Baptist Church, Lafayette.

Music.

Greeting—President W. E. Stone.

Ways in Which Farmers' Institutes May Promote the Agricultural Interests of the State—

10:30. By Encouraging the Agricultural Press—15 minutes. Alexander Johnson, Fort Wayne.

10:55. By Strengthening Agricultural Organizations — 15 minutes. Cal Husselman, Auburn.

11:20. By Fostering and Popularizing Agricultural Education — 15 minutes. H. F. McMahan, Fairfield.

11:35. Discussion—15 minutes.

Announcements.

1:30-2:30 p. m. Inspection of Shops and Laboratories of the University.

Wednesday, 2:30 p. m. J. A. Commons, Centerville, presiding.

Chairmen's Session.

Music.

How to Hold a Successful Institute—

2:40. Preliminary Call of Local Workers—5 minutes. C. B. Benjamin, LeRoy.

2:50. Choosing Subjects—5 minutes. H. P. Haines, Boonville.
3:00. Making up Program—7 minutes. D. B. Johnson, Mooresville.
3:10. Selecting Local Speakers—5 minutes. L. C. Hoss, Kokomo.
3:20. Enlisting the Business Men—7 minutes. George R. Knisely, Columbia City.
3:30. Advertising the Meeting—7 minutes. J. H. Hewitt, New Castle.
3:40. Securing and Preparing the Hall—5 minutes. J. J. Wheeler, Rome.
3:50. Receiving the People—5 minutes. W. C. Goldsmith, Evansville.
4:00. Conducting the Meeting—7 minutes. D. F. Maish, Frankfort.
4:10. Reporting the Institute—5 minutes. H. M. Widney, St. Joe.
4:20. Questions and General Discussion.

Wednesday, 7:30 p. m. Mrs. C. N. Lindley, Salem, presiding.

Music.

How the Farmers' Institute Can Interest the School Children in Agriculture—Professor Stanley M. Coulter.

Music.

What the Agricultural College Can Do for the Farmers' Sons and Daughters—President Stone.

Music.

What Training for Home Making, in the College Education of Girls, is Accomplishing—Miss Laura G. Day, Manhattan, Kans., Instructor in Domestic Science for the Winter Course in Agriculture.

Music.

Informal reception in Philalethean-Carlyle Hall.

Thursday, 9:30 a. m. J. M. Schermerhorn, Brimfield, presiding.

Music.

Prayer—Rev. H. L. Kindig, Pastor West Lafayette M. E. Church.

Music.

Suggestions for Enlarging and Improving the Institute Work—

9:50. As to Number and Location of Meetings—Scope of the Work—Supervision, etc.—15 minutes. Prof. W. C. Latta.
10:15. As to Local Organization for Institute Work—8 minutes. L. B. Clore, Franklin.
10:30. As to Reaching the Home and Its Inmates—10 minutes. Mrs. R. A. Hume, Plymouth.
10:50. As to Enlisting Young Men—10 minutes. E. A. Metzger, Granger.
11:10. As to Specialized Programs and Special Sessions—8 minutes. J. B. Burris, Cloverdale.
11:30. As to Co-operation Among Farmers and With Men in Other Pursuits—15 minutes. Milton Trusler, Connersville.

Thursday, 1:30 p. m. C. C. Dawson, Grand View, presidin

Speaker's Session.

Music.

1:45. Miscellaneous Business, Report of Committee on Resolutions, Qualifications of Speakers and Methods of Instruction—

2:00. The Local Speaker—10 minutes. U. M. Stewart, Madison.

2:20. The Assigned Speaker—10 minutes. George W. Dorrell, East Enterprise.

2:40. Most Effective Instruction—Isaiah Imler, Rochester.

3:00. Means of Illustration—10 minutes. L. A. Stockwell, Cloverdale.

3:20. Advice to Speakers—10 minutes. Superintendent Farmers' Institutes.

Questions and Suggestions.

Adjournment.

The program was rendered as given above with the exception of the following substitutions, made necessary by the inability of certain parties to attend: Mr. L. E. Deal, of Lagrange, took the place of Mr. W. C. Goldsmith; Mr. E. W. Hill, of Winchester, took the place assigned to Mr. L. B. Clore; Mr. P. H. McHenry, of Plainville, Mr. E. B. Davis, of Cartersburg, substituted for Mr. E. A. Metzger, and Mr. J. B. Elliott, New Harmony, took the part assigned to Mr. U. M. Stewart.

The conference surpassed any of the previous meetings in the interest manifested and in the intelligent discussion of the questions before the conference. The conference manifested a keen appreciation of the educational character of the Institute work and an earnest desire to promote agricultural education among farmers of the State. The spirit and trend of the conference were admirably reflected in the following resolutions, which were unanimously adopted, as presented by the committee consisting of P. H. McHenry, Plainville; N. W. Powell, Etna Green; B. F. Biliter, Huntington; Mrs. R. A. Hume, Plymouth, and Mrs. C. N. Lindley, Salem. The following is the full text of the

RESOLUTIONS.

Whereas, the American home is the hope of civilization, and believing in its betterment; therefore, be it

Resolved, 1. That we recommend the strengthening of the Woman's Session of our Farmers' Institutes.

2. That the Farmers' Institute Conference of Indiana notes with pleasure and gratification the growing tendency to a union and co-operation of the several agricultural institutions and organizations of the State, and views with interest the future good to the State agricultural industry that could be derived from a close union of these institutions,

3. That the Farmers' Institute Conference desires to express the gratitude of the farmers of Indiana to the Legislature for increasing the appropriation of our money for Farmers' Institute work, and for the erection of a building at Purdue University for the teaching and instruction in agriculture and domestic sciences; and it is our further desire that we, through the Legislature, appropriate sufficient funds to equip and man the new buildings, to the end that these sciences be taught in the best and highest possible way.

4. That it is the sense of this Conference that a part of the work of the coming Institute should be presented for the purpose of causing the parents to take such an interest in the education of their children that their influence may be felt in the selecting of the studies and amount of work done, to the end that a place may be found for Nature Study and the simpler elements of agriculture.

5. That it is the desire of the Conference that the elementary principles of agriculture be introduced and taught in the high schools of the townships of Indiana, to the end that our boys and girls will desire to pursue a college course in agriculture and fit themselves for farmers and makers of homes.

6. That the thanks of this Conference be extended to Professor Latta, and all others who have contributed to its success, and to the pleasure and benefit of those attending.

COUNTIES REPRESENTED AND DELEGATES AT CONFERENCE.

The counties represented and the registered delegates attending the Conference are as follows. Quite a number who attended from the vicinity of Lafayette did not register as delegates:

Adams County—C. D. Kunkle, Chairman, Monmouth.

Allen County—Alexander Johnson, Chairman, Fort Wayne.

Bartholomew County—Frank Tyner, Chairman, Elizabethtown.

Benton County—J. E. Stump, Secretary, Boswell.

Blackford County—A. S. Wetsell, Chairman, Dunkirk; Mrs. F. V. Erwin, Hartford City.

Boone County—P. K. Hessong, Chairman, Zionsville.

Brown County—John F. Bond, Chairman, Nashville.

Carroll County—Geo. W. Shanklin, Chairman, Cutler; T. Fouts, Camden.

Cass County—John P. Martin, Chairman; H. E. Martin, both of Logansport.

Clark County—Joe W. Williams, Chairman, Henryville.

Clay County—Silas Foulke, Chairman, Cory.

Clinton County—D. F. Maish, Chairman, Frankfort; W. W. Peter and M. S. Gunkle, of Mulberry; I. D. Reed, Moran.

Crawford County—J. F. Zimmerman, Chairman, Wickliffe.

Daviess County—Philander McHenry, Chairman, Mrs. P. H. McHenry, Plainville.

Dearborn County—J. C. Hall, Chairman, Wrights Corner; Elmer G. Tufts, Secretary, Aurora.

Decatur County—A. F. Venner, Chairman, Hartsville.

Dekalb County—J. E. Dermott, Secretary, St. Joe; Mr. and Mrs. Cal Husselman, Mary Britton, Frank Britton and Fay Britton, of Carunna.

Delaware County—W. Max Shafer, Chairman, Shideler; Mrs. John M. Bloss, Muncie.

Dubois County—Jacob R. Gercken, Chairman, Hilbert Gercken, both of Huntingburgh.

Fayette County—Milton Trusler, Connersvillé; Elias Scholl, Lyon's Station.

Floyd County—Charles H. Hans, Chairman, Duncan.

Fountain County—Jesse Brant, Chairman, Albert Campbell, both of Hillsboro; Wm. Kreusch, Covington.

Fulton County—Isaiah Imler, Chairman, Rochester; Mrs. James Curtis, Akron.

Gibson County—Mrs. A. L. Smith, Princeton.

Grant County—Mr. J. M. Ballard, Chairman, Marion.

Hamilton County—Mr. T. J. Lindley, Noblesville; E. H. Collins, Carmel.

Hancock County—George Walker, Chairman, and J. Weaver Walker, Willow; Mr. and Mrs. W. P. Binford, Greenfield.

Harrison County—Horace Flora, Chairman, Corydon.

Hendricks County—Evan B. Davis, Chairman, Mrs. Evan B. Davis, Cartersburg, J. M. T. Welborn, Bridgeport.

Henry County—J. H. Hewitt, Chairman, New Castle; R. C. Morgan, Knightstown.

Huntington County—B. F. Biliter, Mrs. J. A. Walker, A. W. Colclesser, J. W. Brown, all of Huntington.

Howard County—L. C. Hoss, Chairman, Kokomo; John W. Taylor, Mrs. Sophia E. Taylor, Vermont.

Jay County—M. H. Hannon, Chairman, Bryant.

Jackson County—O. E. Carter, Chairman, John Auld Forsythe, both of Seymour.

Jennings County—William M. Phillips, Butlerville.

Johnson County—John Tilson, Secretary, Franklin; Geo. C. Banta. Franklin.

Jasper County—Mrs. Ruby Barcus.

Kosciusko County—N. W. Powell, Chairman, Etna Green.

Laporte County—W. W. Henry, Chairman, Scott Wall, Secretary, W. A. Banks, all of Laporte; L. S. Fitch, Oakwood.

Lake County—C. B. Benjamin, Chairman, Z. H. Fiefield, both of LeRoy; Ernest H. Hixon, J. M. Hack, both of Crown Point.

Lagrange County—L. E. Deal, Chairman, Lagrange; J. N. Babcock, Topeka.

Madison County—W. Clifford Wood, Chairman, Pendleton.

Marion County—W. B. Flick, Chairman, Lawrence; Mrs. J. W. Bates, Broad Ripple; W. H. Freeman, J. N. Hurty, both of Indianapolis.

Marshall County—Mrs. R. A. Hume, and Robert A. Hume, of Plymouth.

Martin County—J. M. Sherfick, Chairman, Shoals.

Miami County—Wm. C. Bohn, Chairman, Peru.

Monroe County—H. H. Parks, Chairman, Bloomington.

Morgan County—Nixon Henley, Chairman, Monrovia; D. B. Johnson, Mooresville, Chas. Eby, Brooklyn.

Noble County—J. M. Schermerhorn, Chairman, Brimfield.

Newton County—Will Simons, Kentland.

Ohio County—W. B. Harris, Chairman, Rising Sun.

Orange County—Oscar Hardman, Chairman, Orleans.

Owen County—E. L. Daggy, Chairman, Spencer.

Perry County—J. J. Wheeler, Chairman, Rome.

Pike County—J. D. Selby, Chairman, and Leslie Lamb, of Petersburg.

Porter County—John Brummitt, Chairman, Valparaiso; and J. S. Robbins, E. L. Furness, Furnessville.

Posey County—John B. Elliott, New Harmony; J. H. Gwaltney, Poseyville.

Pulaski County—T. M. Davis, Chairman, R. A. Phillips, Secretary, H. P. Low, all of Star City.

Putnam County—L. A. Stockwell, Chairman, Mr. and Mrs. J. B. Burris, all of Cloverdale; also W. Pickens, of Cloverdale.

Randolph County—E. W. Hill, Chairman, Winchester.

Ripley County—Geo. C. Miller, Chairman, Dillsboro.

Rush County—T. A. Coleman, Chairman, and Mrs. T. A. Coleman, of Rushville.

Scott County—L. B. Stewart, Chairman, Scottsburg.

Shelby County—Henry Pand, Chairman, Shelbyville; Adam F. May, Flat Rock.

Spencer County—C. C. Dawson, Chairman, Spencer.

Starke County—Fred Garing, Chairman, and Mrs. Rose Garing, of North Judson.

Sullivan County—O. P. Pifer, Chairman, Carlisle.

Tippecanoe County—O. C. Allen, Chairman, Mrs. O. C. Allen, H. A. Huston, Q. A. Earl, Grant Holwerda, G. L. Marshall, J. J. Morehouse, J. F. Pierce, W. F. Bryan, all of Lafayette; S. E. Smith, J. W. Smith, both of Montmorenci; L. N. Jester, Colburn; J. H. Boone, Shadeland.

Tipton County—J. D. Smith, Chairman, Wm. Findling, Will Manlove, Frank McLaughlin, all of Tipton.

Union County—H. F. McMahan, Secretary, Liberty; Mrs. Oliver LaFuze, Liberty; Oliver P. LaFuze, Liberty.

Vanderburgh County—W. A. Hanning, Secretary, and A. E. Swope, Evansville; Lewis L. Van Dusen, Evansville.

Vermillion County—E. B. Thompson, Secretary, Dana.

Vigo County—C. C. Belt, Chairman, Edwards.

Switzerland County—G. W. Dorrell, Chairman, Mrs. Geo. W. Dorrell, East Enterprise.

Washington County—Mrs. C. N. Lindley, Chairman, Mrs. W. W. Stevens, both of Salem.

Warren County—N. W. Slater, Chairman, Henry Messmore, both of Marshfield; J. W. Crone, Annie F. Crone, Mrs. Rose Farr, John C. Goodwine, Mr. and Mrs. T. J. Farden, all of West Lebanon.

Warrick County—N. P. Hines, Chairman, Boonville.

Wayne County—J. A. Commons, Chairman, Mrs. J. A. Commons, Centerville.

Wells County—J. A. Walker, Chairman, Huntington. R. R. 1.

White County—W. H. Downs, Chairman, Idaville.

Whitley County—Geo. R. Knisely, Chairman, Columbia City.

Number of counties represented	81
Number of registered delegates	168

SCHEDULE ANNUAL FARMERS' INSTITUTES FOR 1901-1902.

Each county of the State held an Institute under State auspices the past season. The following is a schedule of the meetings held, showing time and place of meeting, chairman and speakers assigned:

DECEMBER.

Place of Meeting and Chairman of Institute.	Date.	Assigned Speakers.
Floyd, Edwardsville	Monday, Dec. 2	Mrs. Bates. Curryer.
Chas. Hans, Duncan	Tuesday, Dec. 3	
Harrison, Corydon	Wednesday, Dec. 4	
Horace Flora, Corydon	Thursday, Dec. 5	
Washington, Salem	Friday, Dec. 6	Curryer.
Mrs. Chas. Lindley, Salem	Saturday, Dec. 7	Collins.
Clark, Otisco	Monday, Dec. 2	McMahan.
Joe Williams, Henryville	Tuesday, Dec. 3	Mrs. Lindley.
Jennings, North Vernon	Wednesday, Dec. 4	McMahan. Burton.
P. B. Ewan, Hayden	Thursday, Dec. 5	
Scott, Scottsburg	Friday, Dec. 6	
L. B. Stewart, Scottsburg	Saturday, Dec. 7	

DECEMBER—Continued.

PLACE OF MEETING AND CHAIRMAN OF INSTITUTE.	DATE.	ASSIGNED SPEAKERS.
Ripley, Milan	Monday, Dec. 2	Lane. Mrs. Carter.
G. C. Miller, Dillsboro	Tuesday, Dec. 3	
Dearborn, Wrights Corner	Wednesday, Dec. 4	
J. C. Hall, Wrights Corner	Thursday, Dec. 5	
Decatur, Letts Corner	Friday, Dec. 6	
A. F. Venner, Hartsville	Saturday, Dec. 7	
Jefferson, Belleview	Monday, Dec. 2	Husselman.
U. M. Stewart, Madison	Tuesday, Dec. 3	Dorrell.
Switzerland, Vevay	Wednesday, Dec. 4	Husselman.
G. W. Dorrell, East Enterprise	Thursday, Dec. 5	U. M. Stewart.
Ohio, Rising Sun	Friday, Dec. 6	Husselman.
W. B. Harris, Rising Sun	Saturday, Dec. 7	Dorrell.
Warrick, Boonville	Monday, Dec. 2	Stockwell. D. B. Johnson.
N. P. Hines, Boonville	Tuesday, Dec. 3	
Spencer, Chrisney	Wednesday, Dec. 4	
C. C. Dawson, Grandview	Thursday, Dec. 5	
Dubois, Huntingburg	Friday, Dec. 6	
J. R. Gerken, Huntingburg	Saturday, Dec. 7	
Pike, Winslow	Monday, Dec. 9	Curryer.
J. D. Selby, Petersburg	Tuesday, Dec. 10	Mrs. Lindley.
Vanderburgh, Stringtown	Wednesday, Dec. 11	Van Norman.
W. C. Goldsmith, Evansville, R. R. 2	Thursday, Dec. 12	Mrs. Lindley.
Crawford, English	Friday, Dec. 13	Van Norman.
J. F. Zimmerman, Wickliffe	Saturday, Dec. 14	Hines.
Lawrence, Mitchell	Wednesday, Dec. 11	Keim. Curryer.
D. W. Sherwood, Bryantsville	Thursday, Dec. 12	
Orange, Orleans	Friday, Dec. 13	
Oscar Hardman, Orleans	Saturday, Dec. 14	
Knox, Oaktown	Monday, Dec. 9	McMahan. E. M. C. Hobbs.
Ellis House, Bicknell	Tuesday, Dec, 10	
Martin, Loogootee	Wednesday, Dec. 11	
J. M. Sherfick, Shoals	Thursday, Dec. 12	
Daviess, Washington	Friday, Dec. 13	McMahan.
P. McHenry, Plainville	Saturday, Dec. 14	Mrs. Erwin.
Clay, Clay City	Monday, Dec. 9	Husselman. Mrs. Erwin.
Silas Foulke, Cory	Tuesday, Dec. 10	
Greene, Lyons	Wednesday, Dec. 11	
W. E. Stacy, Lyons	Thursday, Dec. 12	
Owen, Spencer	Friday, Dec. 13	Husselman.
E. L. Daggy, Spencer	Saturday, Dec. 14	Burris.
Warren, West Lebanon	Monday, Dec. 9	Billingsley. Mrs. Bloss.
N. W. Slater, Marshfield	Tuesday, Dec. 10	
Fountain, Veedersburg	Wednesday, Dec. 11	
Jesse Brant, Hillsborough	Thursday, Dec. 12	
Parke, Rockville	Friday, Dec. 13	
Thos. L. Nevins, Catlin	Saturday, Dec. 14	
Vermillion, Cayuga	Monday, Dec. 16	Husselman.
L. White James, Dana	Tuesday, Dec. 17	Mrs. Ross.
Sullivan, Sullivan	Wednesday, Dec. 18	Husselman. Burris.
O. P. Pifer, Carlisle	Thursday, Dec. 19	
Montgomery, Crawfordsville	Friday, Dec. 20	
J. M. Harshbarger, Ladoga	Saturday, Dec. 21	

DECEMBER—Continued.

Place of Meeting and Chairman of Institute.	Date.	Assigned Speakers.
Hendricks, Danville	Monday, Dec. 16	Lane. C. M. Hobbs.
E. B. Davis, Cartersburg	Tuesday, Dec. 17	
Shelby, Shelbyville	Wednesday, Dec. 18	
Henry Pond, Shelbville	Thursday, Dec. 19	
Bartholomew, Hope	Friday, Dec. 20	
Frank Tyner, Elizabethtown	Saturday, Dec. 21	
Hancock, Greenfield	Monday, Dec. 16	Hart.
Geo. Walker, Willow	Tuesday, Dec. 17	D. B. Johnson.
Grant, Marion.	Wednesday, Dec. 18	Mrs. Bates.
J. M. Ballard, Marion	Thursday, Dec. 19	D. B. Johnson.
Blackford, Hartford City	Friday, Dec. 20	Mrs. Erwin.
A. S. Whetsel, Dunkirk	Saturday, Dec. 21	McMahan.
White, Idaville	Monday, Dec. 16	Mrs. Erwin.
Wm. Downs, Idaville	Tuesday, Dec. 17	McMahan.
Wabash, Wabash	Wednesday, Dec. 18	Mrs. Erwin.
G. M. Naber, Wabash	Thursday, Dec. 19	Curryer.
Pulaski, Star City	Friday, Dec. 20	Mrs. Kline.
F. M. Davis, Star City	Saturday, Dec. 21	Prof. Huston.
Hamilton, Noblesville	Monday, Dec. 16	Somers.
T. E. Beals, Noblesville	Tuesday, Dec 17	Mrs. DeVilbiss.
Johnson, Franklin	Wednesday, Dec. 18	McMahan.
L. B. Clore, Franklin	Thursday, Dec. 19	Mrs. DeVilbiss.
Delaware, Muncie	Friday, Dec. 20	Curryer
W. Max Shafer, Shideler	Saturday, Dec. 21	Mrs. DeVilbiss.
Noble, Albion	Monday, Dec. 16	Curryer.
John Schermerhorn, Brimfield	Tuesday, Dec. 17	Billingsley.
Kosciusko, Warsaw	Wednesday, Dec. 18	Collins.
N. W. Powell, Etna Green	Thursday, Dec. 19	Mrs. Day.
Brown, Nashville	Friday, Dec. 27	Flick.
John F. Bond, Nashville	Saturday, Dec. 28	Billingsley.
Vigo, Terre Haute.	Friday, Dec. 27	Prof. Huston.
C. C. Belt, Terre Haute	Saturday, Dec. 28	Randel.
Perry, Rome	Friday, Dec. 27	Prof. Troop.
J. J. Wheeler, Rome	Saturday, Dec. 28	Mrs. Bates.
Monroe, Bloomington	Friday, Dec. 27	Keim.
W. H. H. Parks, Bloomington	Saturday, Dec. 28	Prof. Latta.

JANUARY.

Jackson, Seymour	Thursday, Jan. 2	Mrs. Bates.
O. E. Carter, Seymour	Friday, Jan. 3	McMahan.
Putnam, Greencastle.	Friday, Jan. 3	Burton. Van Norman (F.). McMahan (S.).
L. A. Stockwell, Cloverdale	Saturday, Jan. 4	

JANUARY—Continued.

Place of Meeting and Chairman of Institute.	Date.	Assigned Speakers.
Jay, Portland	Monday, Jan. 6	Mrs. Bates. Thorp.
M. H. Hannon, Bryant	Tuesday, Jan. 7	
Adams, Decatur	Wednesday, Jan. 8	
C. D. Kunkle, Monmouth	Thursday, Jan. 9	
Wells, Bluffton	Friday, Jan. 10	
J. A. Walker, Huntington, R. R. 1	Saturday, Jan. 11	
Starke, North Judson	Monday, Jan. 6	Babcock. Wm. Stuart.
Fred Garing, North Judson	Tuesday, Jan. 7	
Fulton, Rochester	Wednesday, Jan. 8	
Isiah Imler, Rochester	Thursday, Jan. 9	
Huntington, Huntington	Friday, Jan. 10	Babcock.
G. H. Bailey, Huntington	Saturday, Jan. 11	Billingsley.
Jasper, Rensselaer	Friday, Jan. 10	Prof. Plumb.
B. D. Comer, Rensselaer	Saturday, Jan. 11	Mrs. Kline.
Gibson, Patoka	Wednesday, Jan. 8	McMahan. U. M. Stewart.
Robert Mitchell, Princeton	Thursday. Jan. 9	
Posey, Wadesville	Friday, Jan. 10	
G. W. Cartwright, Wadesville	Saturday, Jan. 11	
Allen, Fort Wayne	Friday, Jan. 10	Somers.
Alex. Johnson, Fort Wayne	Saturday, Jan. 11	Hart.
Dekalb, Auburn	Monday, Jan. 13	Billingsley. Mrs. Carter.
H. M. Widney, St. Joe	Tuesday, Jan. 14	
Steuben, Angola	Wednesday, Jan. 15	
J. B. Parsell, Angola	Thursday, Jan. 16	
Lagrange, Lagrange	Friday, Jan. 17	
L. E. Dea, Plato	Saturday, Jan. 18	
Newton, Kentland	Monday, Jan. 13	Thorp.
David Weldon, Kentland	Tuesday, Jan. 14	Mrs. Bates.
Benton, Boswell	Wednesday, Jan. 15	Thorp.
J. C. Dimmick, Boswell	Thursday, Jan. 16	Whistler.
Tippecanoe, Lafayette	Friday, Jan. 17	Thorp.
O. C. Allen, Lafayette	Saturday, Jan. 18	Mrs. Kline.
Carroll, Flora	Monday, Jan. 20	Billingsley.
G. W. Shanklin, Cutler	Tuesday, Jan. 21	Maish.
Miami, Peru	Wednesday, Jan. 22	Billingsley. Mrs. Erwin.
W. C. Bohn, Peru	Thursday, Jan. 23	
Howard, Kokomo	Friday, Jan. 24	
L. C. Hoss, Kokomo	Saturday, Jan. 25	
Laporte, Laporte	Monday, Jan. 20	McMahan. Mrs. Bates.
H. W. Henry, Laporte	Tuesday, Jan. 21	
St. Joseph, South Bend	Wednesday, Jan. 22	
E. A. Metzger, Granger	Thursday, Jan. 23	
Elkhart, Goshen	Friday, Jan. 24	
J. J. Zolinger, Goshen	Saturday, Jan. 25	
Randolph, Winchester	Monday, Jan. 20	Nowlin. Mrs. Carter.
E. W. Hill, Winchester	Tuesday, Jan. 21	
Wayne, Centerville	Wednesday, Jan. 22	
Joseph Commons, Centerville	Thursday, Jan. 23	
Henry, New Castle	Friday, Jan. 24	
J. H. Hewitt, New Castle	Saturday, Jan. 25	
Boone, Lebanon	Monday, Jan. 27	Keim. Mrs. Bates.
P. K. Hessong, Zionsville	Tuesday, Jan. 28	
Tipton, Tipton	Wednesday, Jan. 29	
J. D. Smith, Tipton	Thursday, Jan. 30	

JANUARY—Continued.

Place of Meeting and Chairman of Institute.	Date.	Assigned Speakers.
Clinton, Frankfort	Friday, Jan. 31	Keim.
D. F. Maish, Frankfort	Saturday, Feb. 1	Somers.
Rush, Rushville	Wednesday, Jan. 29	Nowlin. Mrs. Lindley.
T. A. Coleman, Rushville	Thursday, Jan. 30	
Franklin, Brookville	Friday, Jan. 31	
J. H. Cook, Mt. Carmel	Saturday, Feb. 1	

FEBRUARY.

Madison, Anderson	Monday, Feb. 3	Lane. Keim.
W. C. Wood, Pendleton	Tuesday, Feb. 4	
Morgan, Mooresville	Wednesday, Feb. 5	
Nixon Henley, Monrovia	Thursday, Feb. 6	
Marion, Southport	Friday, Feb. 7	Lane.
W. B. Flick, Lawrence	Saturday, Feb. 8	Mrs. Kline.
Marshall, Plymouth	Monday, Feb. 3	Billingsley. Benjamin.
C. W. Shakes, Bourbon	Tuesday, Feb. 4	
Whitley, Columbia City	Wednesday, Feb. 5	
Geo. Knisely, Columbia City	Thursday, Feb. 6	
Cass, Logansport	Friday, Feb. 7	
J. P. Martin, Logansport	Saturday, Feb. 8	
Union, Liberty	Wednesday, Feb. 5	Nowlin.
James Eaton, Liberty	Thursday, Feb. 6	C. M. Hobbs.
Fayette, Connersville	Friday, Feb. 7	D. B. Johnson.
W. R. Porter, Connersville	Saturday, Feb. 8	Nowlin.
Porter, Valparaiso	Wednesday, Feb. 12	McMahan.
J. W. Brummitt, Valparaiso	Thursday, Feb. 13	Miss Day.
	Thursday, Feb. 13	Prof. Latta.
Lake, Crown Point	Friday, Feb. 14	Mrs. Kline (F. S.).
C. B. Benjamin, LeRoy	Saturday, Feb. 15	McMahan (F. S.).

ATTENDANCE AT ANNUAL FARMERS' INSTITUTE.

The following table gives the number of sessions and the average attendance at each Annual Institute. The average attendance at each Institute for each of the three years previous and the general averages for several years are given for comparison:

County.	*Number Sessions Held.*	*Average Attendance.*			
		1902.	*1900–1901.*	*1899–1900.*	*1898–1899.*
Adams	5	216	208	206	205
Allen	5	307	167	286	199
Bartholomew	5	177	508	480	515
Benton	5	140	266	43	171
Blackford	4	98	463	161	155
Boone	5	290	212	340	60
Brown	5	147	70	123	124
Carroll	4	294	185	102	81
Cass	4	190	122	173	164
Clark	5	78	38	57	100
Clay	5	82	184	77	192
Clinton	5	1,165	403	375	222
Crawford	4	75	89	96	56
Daviess	5	53	163	316	335
Dearborn	5	174	88	123	100
Decatur	5	437	168	174	381
Dekalb	5	279	407	372	267
Delaware	4	114	240	124	89
Dubois	5	176	204	155	184
Elkhart	5	985	754	785	390
Fayette	4	222	204	109	145
Floyd	5	58	94	90	50
Fountain	5	178	123	194	143
Franklin	5	268	326	188	272
Fulton	5	582	528	682	665
Gibson	5	260	189	277	185
Grant	5	222	400	359	456
Greene	5	252	192	69	45
Hamilton	5	83	162	244	315
Hancock	5	136	315	353	257
Harrison	5	172	305	260	190
Hendricks	4	177	205	331	287
Henry	5	1,318	795	860	735
Howard	6	320	180	288	260
Huntington	4	361	401	560	561
Jackson	6	254	136	170	152

County.	*Number Sessions Held.*	*Average Attendance.*			
		1902.	*1900–1901.*	*1899–1900.*	*1898–1899.*
Jay	6	178	163	227	216
Jasper	5	123	207	219	170
Jefferson	5	169	178	195	210
Jennings	5	78	119	63	46
Johnson	4	181	320	321	294
Kosciusko	4	275	521	615	530
Knox	5	199	720	646	451
Lagrange	5	640	436	642	602
Lake	8	280	377	229	227
Laporte	5	247	300	360	153
Lawrence	5	62	131	67	39
Madison	5	581	1,060	450	339
Marion	5	411	190	167	90
Marshall	5	235	753	440	310
Martin	5	66	47	35	107
Miami	4	143	108	212	166
Monroe	5	206	182	172	131
Montgomery	5	296	157	290	403
Morgan	5	295	252	406	289
Newton	5	120	83	108	97
Noble	5	104	115	197	285
Ohio	5	120	94	136	83
Orange	5	120	344	204	304
Owen	5	58	97	148	122
Parke	4	59	311	354	260
Perry	6	244	166	311	159
Pike	4	71	162	217	169
Porter	5	415	298	165	148
Posey	5	448	445	414	372
Pulaski	5	124	144	179	173
Putnam	5	362	370	386	274
Randolph	5	603	353	397	590
Ripley	5	137	134	152	136
Rush	5	540	381	154	178
Scott	5	107	165	133	121
Shelby	5	268	474	500	313
Spencer	5	195	244	199	183
Starke	4	72	132	107	108
St. Joseph	5	1,140	1,105	1,000	1,500
Steuben	5	388	360	465	402
Sullivan	5	57	64	101	98
Switzerland	5	243	168	285	259

County.	*Number Sessions Held.*	*Average Attendance.*			
		1902	*1900–1901.*	*1899–1900.*	*1898–1899.*
Tippecanoe	4	188	215	163	261
Tipton	5	508	470	586	525
Union	4	449	261	216	305
Vanderburgh	6	196	151	181	195
Vermillion	5	108	170	62	67
Vigo	4	179	184	130	205
Wabash	4	88	213	129	234
Warren	5	271	135	85	60
Warrick	5	143	108	189	163
Washington	5	163	93	299	151
Wayne	5	462	217	265	420
Wells	5	480	640	416	466
White	5	178	133	117	66
Whitley	5	332	470	353	146
General average	..	260	279	269	250

General average, 1897-1898	272
General average, 1896-1897	232
General average, 1895-1896	272
General average, 1894-1895	118

SCHEDULE OF SUPPLEMENTAL INSTITUTES FOR 1901-1902.

PLACE OF MEETING AND CHAIRMAN OF INSTITUTE.	DATE.	ASSIGNED SPEAKERS.
Henry, Spiceland Herbert Newby, Spiceland	October 21	Van Norman.
Henry, New Lisbon	October 22	Van Norman,
Wayne, Hagerstown T. A. Shaffer, Hagerstown	October 23	Van Norman,
Wayne, Fountain City W. S. Commons, Fountain City	October 24	Van Norman,
Wayne, Webster W. S. Commons, Fountain City	October 25	Van Norman.
Henry, Straughn E. E. Henley, Straughn	October 26	Van Norman.
Sullivan, Farmersburg W. S. Baldridge, Farmersburg	October 28	Van Norman.
Vigo, Prairie Creek Perry L. Johnson, Prairie Creek	October 29	Van Norman.

Place of Meeting and Chairman of Institutes.	Date.	Assigned Speakers.
Sullivan, Carlisle	October 30	Van Norman.
James H. Padgitt, Carlisle		
Jasper, Wheatfield	November 18	Babcock. Van Norman.
Edw. Biggs, Wheatfield	November 19	
Lake, Lowell	November 20	
O. Dinwiddie, Orchard Grove	November 21	
Porter, Chesterton	November 22	
A. J. Bowser, Chesterton	November 23	
Allen, Hoagland	November 18	McMahan. Curryer.
J. L. Smith, Hoagland		
Allen, Monroeville	November 19	
N. P. Brown, Monroeville		
Whitley, Churubusco	November 20	
Lewis Metsker, Churubusco	November 21	
Whitley, South Whitley	November 22	
A. H. Pence, South Whitley	November 23	
Wells, Ossian	November 18	Husselman.
J. W. D. Metts, Ossian	November 19	Mrs. Erwin.
Fulton, Akron	November 20	Husselman.
F. S. Strong, Akron	November 21	Mrs. Erwin.
Jasper, Remington	November 22	Husselman.
L. T. Alter, Remington	November 23	Prof. Troop.
Randolph, Losantville	November 20	Nowlin. Mrs. Bates.
I. F. Beeson, Losantville	November 21	
Randolph, Ridgeville	November 22	
H. Jack, Ridgeville	November 23	
Hancock, Fortville	November 18	Billingsley. Mrs. Bloss.
J. P. McCord, McCordsville	November 19	
Marion, Cumberland	November 20	
W. J. Schlericher, Cumberland	November 21	
Johnson, Greenwood	November 22	Prof. Plumb.
E. A. Robinson, Rocke Lane	November 23	Lane.
Morgan, Martinsville	November 18	Lane. Somers.
S. Majors, Martinsville	November 19	
Marion, Bridgeport	November 20	
J. M. T. Welborn, Bridgeport		
Hendricks, Pittsboro	November 21	Lane. Mrs. Carter.
J. W. Keeny, Pittsboro		
Howard, Greentown	November 22	Maish. Somers.
C. L. Cates, Sycamore		
Howard, New London	November 23	
A. M. Zell, West Middleton		
Madison, Elwood	November 18	Burris.
C. C. Mays, Elwood	November 19	Flick.
Clinton, Middle Fork	November 20	Burris. Keim.
M. V. Unger, Middle Fork	November 21	
Warren, Pine Village	November 22	
J. G. Eberle, Pine Village	November 23	
Knox, Frickton	November 18	Randel. Gwaltney.
Ed Ruble, Frickton	November 19	
Warrick, Yankeetown	November 20	
L. Taylor, Yankeetown	November 21	
Warrick, Elberfeld	November 22	
Wm. Fisher, Elberfeld	November 23	

PLACE OF MEETING AND CHAIRMAN OF INSTITUTE.	DATE.	ASSIGNED SPEAKERS.
Dubois, Birds Eye	November 18	Collins. Dorrel.
J. J Cunningham, Birds Eye	November 19	
Pike, Otwell	November 20	
W. B. Anderson, Otwell	November 21	
Spencer, Rockport	November 22	
J. A. Haines, Rockport	November 23	
Harrison, Laconia	November 18	Burton. Cooperider.
J. F. Russell, Laconia	November 19	
Scott, Underwood	November 20	
J. M. Davis, Underwood	November 21	
Washington, Martinsburg	November 22	
W. H. Bright, Martinsburg	November 23	
Orange, Paoli	November 25	Randel. E. M. C. Hobbs.
T. N. Braxton, Paoli	November 26	
Owen, Gosport	November 27	Burton. E. M. C. Hobbs.
C. A. Pritchard, Gosport	November 28	
Owen, Cataract	November 29	
T. F. Wakeland, Cataract	November 30	
Montgomery, Ladoga	November 25	McMahan. D. B. Johnson.
J. M. Harshbarger, Ladoga	November 26	
Putnam, Russellville L A. Stockwell, Cloverdale	November 28	
Jackson, Mooney	November 29-30	
Kosciusko, Mentone	November 25	Husselman. Curryer.
S. A. Guy, Etna Green	November 26	
Elkhart, Nappanee	November 27	
C. W. Anglin, Nappanee	November 28	
Dekalb, St. Joe	November 29	
H. H. Widney, St. Joe	November 30	
St. Joe, New Carlisle A. H. Compton, New Carlisle	December 4	Van Norman.
St. Joe, Osceola C. W. Curtis, Osceola	December 5	
LaGrange, Topeka J. N. Babcock, Topeka	December 6	
Henry, Knightstown	January 27	Nowlin. Mrs. Lindley.
R. C. Morgan, Knightstown	January 28	
Vigo, Middletown	February 17	McMahan. Wm. Stuart.
C. H. Morgan, Prairie Creek	February 18	
Gibson, Owensville	February 21	
W. D. Johnson, Owensville	February 22	
Spencer, Dale	February 24	McMahan. U. M. Stewart.
Jacob Wells, Dale	February 25	
Pike, Petersburg	February 26	
Leslie, Lamb, Petersburg	February 27	
Owen, Patricksburg	February 28	
H. A. King, Vandalia	March 1	
Floyd, Grant Line Hall	February 24	Burton. Gwaltney.
J. A. Hinds, New Albany	February 25	
Scott, Lexington	February 26	
A. G. Mace, Lexington	February 27	
Jennings, Paris Crossing	February 28	
A. V. Hudson, Paris Crossing	March 1	
Noble, Kendallville	February 24	D. B. Johnson. Burris.
W. K Rosenberry, Kendallville	February 25	
Steuben, Orland	February 26	
D. C. Salisbury, Orland	February 27	
Lagrange, Wolcottville J. C. Grossman, Wolcottville	February 28	
Lagrange, Lima J. A. Durand, Lima	March 1	

PLACE OF MEETING AND CHAIRMAN OF INSTITUTE.	DATE.	ASSIGNED SPEAKERS.
Laporte, Hanna	February 24	Billingsley. Babcock.
J. W. Osborn, Hanna	February 25	
Marshall, Bourbon	February 26	
C W. Shakes, Bourbon	February 27	
Noble, Ligonier	February 28	
J. C. Kimmel, Ligonier	March 1	
Huntington, Warren	March 3	Billingsley. Flick.
J. W. Beard, Warren	March 4	
Blackford, Millgrove	March 5	
J. S. Fuqua, Millgrove	March 6	
Tipton, Windfall	March 7	
W. C. Legg, Windfall	March 8	
Union, College Corner	March 3	McMahan. Hines.
T. J. Bartley, Bath	March 4	
Switzerland, East Enterprise	March 5	
W. C. Brimer, Bascom	March 6	
Ripley, Osgood	March 7	
C. M. Shockley, Osgood	March 8	
Clark, Borden	March 3	Burton. Burris.
W. W. Borden, Borden	March 4	
Harrison, Lanesville	March 5	
J. A. Harbinson, Breckenridge	March 6	
Crawford, Eckerty	March 7	
James Thurston, Eckerty	March 8	
Parke, Rosedale	March 10	McMahan. Flick.
A. H. Rukes, Rosedale	March 11	
Montgomery, Darlington	March 12	
R. C. Harper, Darlington	March 13	
Fountain, Attica	March 10	Benjamin. Collins.
Will Colvert, Attica	March 11	
Wabash, Roann	March 12	
S. H Werst, Wabash, R. R. 1	March 13	
Wabash, Lafontaine	March 14	
Ellis Bloom, Lafontaine	March 15	
Randolph, Parker	March 10	Babcock. D. B. Johnson.
H. M. Arbogast, Parker	March 11	
Wayne, Cambridge City	March 12	
W. H. Garr, East Germantown	March 13	
Hamilton, Sheridan	March 14	
L. S. Kercheval, Sheridan	March 15	
Carroll, Yeoman	March 17-18	McMahan. Benjamin.
Pulaski, Francesville	March 19	
L. W. Hubbel, Francesville	March 20	
Huntington, Clear Creek L. E. Wren, Goblesville	March 21	
Huntington, Roanoke J. B. Miller, Huntington, R. R. 5	March 22	
Sullivan, Farmersburg	March 24	Miss Day. Billingsley.
O. P. Pifer, Carlisle	March 25	
Knox, Sandborn	March 26	
I. A. Hilderbrand, Sandborn	March 27	
Lawrence, Tunnelton	March 28	
R. S. Duncan, Bedford	March 29	

ATTENDANCE AT SUPPLEMENTAL INSTITUTES.

County.	*Place.*	*Average.*
Allen	Hoagland	67
Allen	Monroeville	43
Blackford	Milgrove	139
Carroll	Yeoman	188
Clark	Borden	182
Clinton	Middlefork	213
Crawford	Eckerty	62
Dekalb	St. Joe	25
Dubois	Birds Eye	50
Elkhart	Nappanee	749
Floyd	Grant Line Hall	71
Fountain	Attica	77
Fulton	Akron	124
Gibson	Owensville	360
Hamilton	Sheridan	77
Hancock	Fortville	173
Harrison	Laconia	110
Harrison	Lanesville	66
Henry	Spiceland	60
Henry	Knightstown	374
Henry	New Lisbon	60
Henry	Straughn	45
Hendricks	Pittsboro	259
Howard	Greentown	60
Howard	New London	65
Huntington	Roanoke	178
Huntington	Warren	279
Huntington	Clear Creek	53
Jackson	Mooney	84
Jasper	Wheatfield	73
Jasper	Remington	92
Jennings	Paris Crossing	86
Johnson	Greenwood	163
Knox	Frichton	121
Knox	Sandborn	68
Kosciusko	Mentone	306
Lake	Lowell	197
Lagrange	Wolcottville	165
Lagrange	Lima	76
Lagrange	Topeka	84
Lawrence	Tunnelton	72
Laporte	Hanna	175

County.	*Place.*	*Average.*
Madison	Elwood	422
Marion	Cumberland	172
Marion	Bridgeport	42
Marshall	Bourbon	251
Montgomery	Darlington	144
Montgomery	Ladoga	166
Morgan	Martinsville	77
Noble	Ligonier	117
Noble	Kendallville	139
Orange	Paoli	115
Owen	Cataract	77
Owen	Gosport	51
Owen	Patricksburg	67
Parke	Rosedale	142
Pike	Petersburg	62
Pike	Otwell	160
Porter	Chesterton	67
Pulaski	Francesville	57
Putnam	Russellville	161
Randolph	Ridgeville	158
Randolph	Parker	175
Randolph	Losantville	134
Ripley	Osgood	164
St. Joseph	New Carlisle	50
St. Joseph	Osceola	100
Scott	Underwood	49
Scott	Lexington	100
Spencer	Dale	170
Spencer	Rockport	285
Steuben	Orland	169
Sullivan	Farmersburg (Dairy)	25
Sullivan	Farmersburg (General)	50
Sullivan	Carlisle	33
Switzerland	East Enterprise	89
Tipton	Windfall	442
Union	College Corner, O.	169
Vigo	Middletown	265
Vigo	Prairie Creek	50
Wabash	Lafontaine	104
Wabash	Roann	124
Warren	Pine Village	124
Warrick	Elberfield	41
Warrick	Yankeetown	171
Washington	Martinsburg	145

County.	*Place.*	*Average.*
Wells	Ossian	195
Wayne	Hagerstown	6
Wayne	Cambridge City	142
Wayne	Fountain City	50
Wayne	Webster	35
Whitley	Churubusco	144
Whitley	South Whitley	286
General average		137

EXPENDITURE OF THE INSTITUTE FUND.

The disbursements of the Institute fund for the year ending June 30, 1902, as shown by the books of the Superintendent of Institutes, are as follows: The unexpended balance shown below will be used upon the Annual Conference, some District Institutes, to pay salaries, and defray the necessary office expenses, including postage, printing and stationery, etc.

Bills of Institute chairmen	$2,093 41
Traveling expenses and per diem of assigned speakers	4,973 18
Salaries of superintendent and clerks	987 45
Postage, printing and stationery, speakers' charts, etc.	247 07
Traveling expenses of superintendent	50 40
Dues, American Association of Institute workers (2 years)	10 00
Unexpended balance June 30, 1902	1,638 49
Total	$10,000 00

ACKNOWLEDGMENT.

The undersigned desires to acknowledge his indebtedness to the President of Purdue University and to the Directors of the Experiment Station, for many valuable suggestions. As heretofore the services of the Secretary of the University and of the auditing committee, in keeping the accounts and auditing the bills, have been rendered without charge against the institute fund. The attitude of the press of the State has continued to be cordial and very helpful indeed. The railway companies have granted special rates as heretofore, to speakers, upon request of the Superintendent. In most cases the county institute officers have labored as heretofore without compensation and the success of the work in their respective counties has been largely due to the public spirit and the generosity with which these gratuitous services have been rendered.

W. C. LATTA,
Superintendent Farmers' Institutes.

Purdue University, Lafayette, Ind., July 5, 1902.

HOW I GROW BIG CROPS OF CORN.

W. E. LAMB, PETERSBURG, IND.

[Read before the Pike County Farmers' Institute.]

How to grow big crops of corn is one of the most important subjects before the American farmer today. With corn at 60 to 75 cents per bushel and the bins of the world practically empty, it behooves us to look well to the production of a large crop the coming year. In this country corn is the most important cereal crop grown, as based on crop production and value. It may not always be the most profitable crop, but it is the mightiest in the aggregate. In the fiscal year 1897 and 1898 the country's cotton crop was worth $306,000,000, its wheat $392,000,000, but its corn had a farm value of over $552,000,000. The production of corn in 1900 was over 2,100,000,000 bushels with a value of $751,000,000. About 80 per cent. of all the corn grown is in the United States. With the average of the country at about 27 bushels per acre and an authenticated yield of 239 bushels of crib cured corn from a measured acre, we have before us the possibilities for improvements in the cultivation of this crop. It shows what may be done with good soil, good seed and thorough cultivation.

In growing big crops of corn we must have a good soil, well drained, with much humus; we prefer a good strong clover to any other.

The manure made on the farm is spread on the clover fields during the spring and summer or on the fields we intend putting in corn during the winter and spring as fast as made, when it is possible to haul it over the land. We have never used any commercial fertilizers on corn. A careful examination of the experiments made in supplying fertilizers to the corn crop conducted by the different experiment stations, show in several instances that the increase in crop has not been sufficient to pay cost of fertilizer. At the Ohio station twenty-one separate experiments were made on soils varying widely in character and located in different parts of the state, and extending over about six years. As a result of these experiments the conclusion was reached that a profitable production of corn by the use of commercial fertilizers would be a hopeless undertaking. In my judgment, if we use fertilizers at all the proper way is to apply the fertilizer on the wheat in order to get a good catch of clover, then spread all the barnyard manure you can make over the clover fields and you will have an ideal soil for the production of a large crop of corn.

On the preparation of the soil depends in a great measure the success of the crop. The ground should be thoroughly pulverized before planting the corn, for the more thoroughly the soil is prepared before planting the more satisfactorily will be the crop returns. We would plow at a depth of at least seven inches, if dry windy weather we would follow with a roller or drag, in order to pack the soil and retain the moisture. Then before planting give at least two good harrowings. On heavy sod land a disc can be used to good advantage in pulverizing and cutting the overturned turf.

Another important thing in the production of a big crop of corn is the selection of the seed, and especially will this be so the coming spring, for upon the quality of the seed planted in a considerable measure depends the character of the crop. Seed to be good should be specially selected and preserved under conditions favorable to prompt, strong germination. In selecting seed corn from the field, which is the proper place to select it, always select ears growing on good sized, healthy, short jointed, thickish stalks, with the ears borne low down on short shanks. My ideal of an ear is one about 10 or 12 inches long to 2½ to 3 inches in diameter, nearly uniform in thickness throughout, with 16 to 20 rows well filled out at each end, and with but little space between the rows, the kernels rather thick and solid with a medium sized cob. A very large cob does not accompany great productions. As to varieties Boone County White and Dungan's White Prolific for white, and Leaming for yellow are good varieties for this locality. For the last few years we have grown Dungan's White Prolific almost entirely. As to which will give the greater yield, white or yellow, we have always thought that a white variety would give the greatest yield. But the results at the experiment stations show the yield to be practically the same. As the result of five years experiments at the Illinois station with eleven varieties, Champion White Pearl gave the highest average, 72.2 and Leaming 74.8 bushels per acre, a difference of 1.4 bushels per acre in favor of the white variety. In shelling the seed it has been my custom to reject the small grains at the tip and the irregular grains at the butt of the ear. If for no other reason than that even sized grains work better in our improved machinery. But we notice in different trials at the stations where seed from the butt, center and tip of ears have been planted in different plots the results have been slightly in favor of the grains from the tip of the ear. But the evidence on this point we don't think is sufficient. Based on the general law that like produces like, large seeds should produce stronger plants with a greater capacity for reproduction than small seed of the same kind.

The seed having been selected and the ground thoroughly prepared, we would plant as soon as the ground got warm enough. Corn not only requires a warm air temperature to grow well in, but the soil must be reasonably warm before planting, for we can not expect a proper germination of the seed in cold soil. The soil being warm and in condition, we would plant the last of April or first of May. There is no right date to plant corn, but there is a right time; we would rather be a little early than a little late. The right time we think is when the ground is warm and in condition, whether it be the last of April or the middle of May.

In the spring of 1900, the ground being warm and in good condition, we planted a sixty-acre clover field in the last days of April, a good shower of rain having fallen after planting. We gave the field a good harrowing before the corn came up. We had an excellent stand and gave two good cultivations with the cultivator and had our corn clean and ground in fine condition with a growth of about 18 or twenty inches when the rains that never ceased until harvest was over set in, and we did not get to cultivate any more until the last of June. The result was the corn having a good start grew right along and made an average of 60 bushels per acre. While some of my neighbors who do not believe in planting corn, no matter what the condition of the ground may be in, until the 15th of May, did not get to cultivate their corn at all until after harvest, result was plenty of weeds and no corn.

In planting we use a check rower and drill combined. We prefer to check corn whenever possible, cleaner cultivation can be maintained with the hill system, as the soil can be stirred on all sides of the group of plants. In checking we plant the rows three and a half feet each way, thinning to two stalks in the hill. In drilling the rows the same distance apart and corn twenty inches in the row. As to whether hill or drilled corn will yield the most experimental work thus far conducted indicates that it makes but little difference, so far as yield is concerned, whether corn is grown in hills or drills. As to the cultivation of the crop if the ground is thoroughly prepared before planting the corn is almost half cultivated. Too much stress can not be laid upon clean, thorough cultivation of the growing crop. The soil should be kept well stirred in time of drought. If drought prevails stirring the soil will conserve its moisture. If a rain should fall immediately after planting we would harrow the corn before it got through the ground; if cloudy we would roll and follow with the harrow; we think corn should be cultivated as soon as the ground is in condition after every rain. Would plow five times. Corn being of the grass family and having no top root it is essentially a surface feeder, the small roots running out in all directions at a depth of four or five inches from the surface. For this reason shallow cultivation of the crop is advocated. On our heavy clay soil, however, if we have had a heavy rain before the first plowing, we would give rather deep cultivation, about four inches the first plowing, after that shallow cultivation of the crop has given the greatest yield.

In concluding we will say let us try to do our best in the cultivation of this crop the coming spring; plow at least 7 or 8 inches deep, thoroughly prepare the soil and give good and frequent cultivation. No other cereal crop yields the farmer so large a return for his labor as the Indian corn It is the king of the cereals.

CORN STOVER.

AN INTERESTING AND VALUABLE EXPERIENCE TOLD IN DETAIL.

[**Clay B. Carver, of Rockville, at the Farmers' Institute, Pike County.**]

When I was a very small boy I began taking some part in the cultivation of corn. My first work was to drop the corn in the very imperfect cross made by a three-runner sled and a single shovel plow. As every hill must have not less than three or more than four grains, and the man with the hoe covering was at my heels from morning until night, I became very tired during the long summer days.

Then, when I was a little older, I took a very heavy hoe with a crooked, rough handle and pulled the soil over the corn. This soil was prepared with an "A" harrow with teeth one inch square at the top, tapering to an indefinite point and an indefinite length. We usually had a sod field for corn, so you may imagine how tired a small boy got covering corn all day. Then came the "jumping-jack," as we called it. A square bottomed shovel plow which we dragged along in the bottom of each furrow and jumped each hill as we came to it. We usually had a large crop for those days and every boy on the place labored from early morning until late at night. The corn planted and up, we took the same "A" harrow with two front teeth out and went over the corn to pulverize the clods and kill an occasional weed. An awkward team and a heavy harrow made this a very disagreeable task. Then came "thinning"—that abominable work to the small boy. Imagine, if you will, three small boys starting in to thin 40 acres of corn—every hill to three stalks and pulling all the suckers. To show the awfulness of our task I might state that we thinned some fields three times the same year!

Later came the double shovel. My first experience with that tool was in following a knock-kneed mule, which would persist in turning around in the middle of the field whenever the dinner bell rang. The older boys would laugh at me and I sometimes became very angry. We talk a great deal about how to keep the boys on the farm. Such experiences as these are enough to disgust a boy, but such experiences many boys have had.

My father was very ready to adopt the more modern methods and our planter was the first in the neighborhood for a long time. It was a great delight to me to jerk the lever over every mark while my older brother drove the team. Then came the spring-tooth harrow, smoothing harrow and cultivator whereby all this work was made easier and more agreeable.

During these early experiences my father fed cattle. He persisted in putting as near all of this corn in shock as possible with available help.

This he began to feed in February usually. Our schools were out by March 1, so the boys hauled out most of the fodder. Every day it had to come out. Many times in mud and rain or perhaps deep snow. Sometimes the fodder was so frozen to the ground that most every stalk had to be chopped from the ground with the same old dull hoe used in covering the grains of corn at planting time. This fodder was often hauled on a wagon of the old high wheeled kind. On Saturdays we hauled a double portion, one for the Sabbath. How we dreaded the job! Then as spring came on we usually had some corn to husk out of the shock. So every cold, damp day we had that disagreeable task to perform.

Do you wonder that I despised corn fodder? Do you wonder that I vowed that when I became a man and owned a farm I would never cut a stalk of corn? Those early recollections have lost me many a dollar. Sometimes when hay has been scarce or very high I have broken my vow but always with the same sad experience in husking and hauling.

Then I have read in our agricultural papers the value of corn fodder—most equal to the grain itself. Then I have heard in these farmers institutes men give their experience in shredding; of the great cost, yet all acknowledging the value of the feed. It seemed to me the cost equaled the food value obtained.

These facts convinced me that if I could get proper machinery at small cost corn stover would be an economic feed. The first thing was the corn harvester, costing $120. I resolved to cut my entire crop of 50 acres, which would have been impossible without the binder. I got my corn in shock for $1 per acre, counting nothing for my team, as it would otherwise have been idle while I was at this work. I counted 15c. for twine, 50c. for machine and 35c. for setting up corn, making 4 cents per shock, 12 hills square.

Then came the shredder. Counting help to run a shredder of the smallest capacity, I found it would pay best to interest one of my neighbors in the same plan. This man I found in John Williams. After having used our machine he pronounces it a success. We, together, had 80 acres to shred—2,000 shocks and at the lowest estimate of cost would have been $140 to get it all shredded. So we purchased a $180 machine. Hired our power for $3 per day. The estimated cost of our work is as follows:

6 men, 10 days	$60
1 man, 5 days	5
Power	30
Coal	15
Board of men	15
Use of shredder	35
Total	$160

Or $2 per acre. Only $20 more for entire cost of shredding than we would have paid for the use of a machine in hiring the work done. Then we have $3 per ton for corn stover in the mow and corn put in the crib free of charge. As before, I count nothing for the team as all these teams would have been to wagons in husking, thus earning nothing. I consider this feed worth $6 per ton, leaving us a profit of $240, counting one ton per acre and nothing for putting our corn in the crib.

Where corn is bound two wagons are all that are needed to haul the corn to our machine. Where cut by hand three are needed; also one man in field to hand up fodder in either case. One man to haul water and the husked corn and two men with machine, making six men for bound and seven for loose fodder.

Many have asked me if we had not better have bought a larger machine. I say no. In 23½ days work we shredded nearly 200 acres of corn, averaging at least 8 acres per day or 200 shocks, 12 hills square. This is sufficient speed for most farmers in this country. We also think it the most economical speed for many reasons suggested in this paper.

I think the cheapest power is the "tread," an old-fashioned power, but one coming much in favor. A sweep power takes too many horses and steam and gasoline are too expensive for work required. A three-horse tread costing $125 is sufficient power for our machine. This year's run, had we used this power, would have saved us enough to make a two-thirds payment on the same.

Taking all in all we are prepared for the winter. We are short on corn, but this is fully made up with barns full of nice, bright corn stover. When spring comes we expect our stock to go on the grass in good flesh, thereby saving us many dollars which otherwise would have been lost.

SORGHUM AS A FORAGE CROP.

C. C. DAWSON, GRANDVIEW, IND.

[Read before Spencer County Farmers' Institute.]

The growth of sorghum was introduced in the United States about forty-five years ago, from seed obtained in China. Since then its cultivation has spread to all parts of the country. Yet I am persuaded to believe that sorghum as a forage plant is not fully understood or appreciated by the great bulk of farmers of this country. Its value as a forage plant can not be overestimated. It comes in just right for soiling purposes. Nothing will beat it to cut and throw over in the pasture or feed-lot during the usually dry months of August and September. It makes an excellent supplement to the dry pastures of this season of the year, furnishing plenty of green, succulent and nutritious food for all kinds of stock. It is readily eaten and greatly relished by horses, cattle, hogs, and all other stock on the farm. Its use does not end here, but it is of great value as a fall and winter forage. When the seeds are in the dough state it should be cut and shocked for forage. If heavy and good-sized shocks are desired it is best to cut four or five rows, put in small shocks, and after curing four or five days cut the rest and add to it. Put up in this way it will cure out bright and be in fine condition for feeding. Cut early and cured all right, no damage will result from freezing. It will keep as well in the shock as corn fodder. As a forage it is very rich and nutritious. No forage can beat it for fall and winter feeding. Hogs will eat it as well as cattle, and will fatten on it with very little additional grain. The seed is estimated to be worth about 90 per cent. as much as corn. One of the best uses made of the seed is as a feed for poultry. It is especially good for laying hens. The yield of sorghum is enormous. You can hardly believe the amount that can be grown on an acre of good soil. On account of it being a deep feeder it will also do well on thin land. Land that is too poor to grow corn will produce a crop of sorghum and still be left in better condition for surface-feeding crops. It does well in a rotation with such crops. The preparation of the land for planting should be about the same as for corn. The harrow should be used freely both before and after planting. The main object is to keep the soil clean and free from weeds. The plant is very slow about coming up and makes very slow top growth for awhile, but after it gets well started nothing can keep it down. It will stand a drouth or the ravages of insects better than any other plant I know of. In the absence of a better machine use a curry-comb to thresh the seed. Get the seed as clean as possible and plant with either a corn or wheat drill in rows about 3 feet to 3 feet 6 inches apart. If wanted for forage plant about twice as thick as you would for syrup. It should have on an average about ten or twelve plants to the foot. The drills put it in about right for forage. Do not thin any. Let it all grow. When grown thick it is better for forage and is easier digested by the stock. Some sow broadcast and cut it for hay, but it is difficult to cure and hard to prevent molding. Unless wanted for pasture, I think a better way is to plant in drills and cultivate as corn. More and better forage can be grown in this way and it will be easier handled. The seed should not be planted until the ground is quite warm. About corn planting time or soon after is a good rule. It can be planted later and good forage grown, but it will run a risk of being injured by freezing in the fall. Keep the ground free from weeds until the cane comes up and you will have little difficulty in cultivating afterwards. You can very profitably commence feeding about the time the heads begin to form. From this time until it matures (which usually covers a period of four or five weeks) it increases very rapidly in its sugar contents and fat producing elements. Every farmer who desires to grow an abundance of good forage on a small amount of land should give this valuable plant a trial. Try an acre and be convinced. If properly handled it will give good returns. Some of the larger varieties are best for this purpose, such as the Orange or Georgia.

CAN FARMERS OF KOSCIUSKO COUNTY AFFORD TO GROW WHEAT AT PRESENT PRICES.

E. F. DIEHL, OF LEESBURG.

[Read before Kosciusko County Farmers' Institute.]

This question is emphasized by entire or partial failures, by several combined causes, of the wheat crop within recent years in this section of the "Wheat Garden of the World" as well as by the low prices prevailing then, due to the low tide of depression affecting all industries.

More than a present mere local view of the wheat question is necessary to determine whether we, not only of Kosciusko County, but of the entire upper Mississippi Basin, shall continue to grow wheat as one of our main crops without much regard to present prices and recent partial failures. A world-wide survey of the past, present and possible future conditions of the wheat problem inclines me to believe that it will be to our best interests, not only to continue the growing of wheat, but to grow more, not by increasing the acreage but by increasing the yield per acre, and I believe this can be best and most economically accomplished by a proper rotation and a judicious selection of crops grown, and enough farm animals of such kinds as will best fit the farmer's fancy and his farm, to consume all crops grown except the wheat and dollar potatoes. And when King Corn wilts to an insignificant crop in a drouthy fall, the queen of cereals, wheat, makes a very refined and welcome substitute.

Wheat has aptly been styled "the staff of life." The food constituents of this cereal are so proportioned as to peculiarly fit it for human food, especially for the brain-working classes, hence has always been the principal cereal food of civilized nations; and while its culture and consumption may not be a prime civilizing factor, yet its increased consumption follows closely after other civilizing and enlightening influences, and so generally is this recognized that it may be said that a country's civilization is measured by the amount of wheat consumed per capita.

The present influences by force of arms, diplomacy and missionary work are rapidly changing rice eating Asiatics to more refined and civilized wheat consumers. The greed of wheat eating nations for more territory is rapidly introducing this cereal into every nook and corner of the world where white man can exist and make money. Much of the new territory being north and south of the temperate or natural wheat zones, the inhabitants will find it more economical to exchange some of their special products for wheat than to grow it. Thus, while the present area—that is, where wheat may be grown to perfection and profitably—may not be much increased, yet wheat consumption will ever be an increasing factor, due to its introduction into new countries and to an increase in population in countries now regarding wheat as the "staff of life." And it is a notable fact that the increase of consumers in this country is made up largely, if not altogether, of those who do not grow wheat; and this is very probably true of every other country growing wheat on a commercial scale. Hence I believe it safe to predict that the low tide of wheat prices ruling in recent years will never be reached again, unless an abnormally large crop of wheat and demoralizing, idle-making hard times should meet to temporarily depress prices; and then the farmer's price per acre, and the idle workman's price per loaf of bread, may be just and satisfactory to both.

In the northern hemisphere the wheat acreage has probably reached its high limit. In North America, west and northwest of us, the vast areas of virgin soils that for several years have been growing spring wheat on so large a scale and so cheaply, are rapidly becoming exhausted of their soil-binding sod and moisture conserving humus—the accumulation of centuries—which are absolutely necessary in these countries of light rainfall and drying winds to grow wheat profitably at prevailing prices, and when this point is reached, diversified farming, stock raising or abandonment becomes inevitable.

In Europe the high limit of wheat acreage has been reached centuries ago, and here Russia is our chief competitor in growing wheat, both in quantity and quality. Wheat for export, and rye for home consumption for the masses of the people, is the order in Russia. Russia's transcontinental railroad traversing southern Siberia, and her Asiatic possessions, opens much country for settlement, but I believe the building of this railway was more for military purposes than for agricultural development along the line of wheat growing.

In the southern hemisphere we need not fear Australia and adjacent islands as formidable rivals in export wheat trade. They are better suited to grow rabbits and other live stock. South America's principal wheat exporting country, Argentine, has probably greater possibilities as a competitor of the United States in growing export wheat than any other country, due to much suitable virgin soil and only a few home consumers; but owing to crude methods of farming and lack of inland transportation facilities, and to the fact that this is an ideal grazing country, and as herding suits the natives better than farming, it is not likely Argentine's increasing wheat supply will more than keep up with the ever-increasing demand, hence can not depress prices in a legitimate way, but only as speculator's reports may affect the markets.

The future of Africa as a wheat producing country is as uncertain as the final outcome of the Boer war.

After the above survey of the present and prospective wheat condition of the world, let us return home and examine the statistics of the annual production of the Queen and King of cereals—wheat and corn—and also note our annual exports, and then feel proud that we live in a country called the "granary of the world," the liberality of whose citizens feeds the famine stricken of all nations. More especially should farmers of Kosciusko County feel satisfied, because we occupy the geographical center of the richest part of Uncle Sam's wheat garden and a mighty rich corner of his corn patch. Then why should the farmers of this county entertain the idea of not growing the usual acreage of wheat? Because of a few failures conditioned on causes partly beyond their control, but not likely to be permanent? As well might they conclude not to grow corn, or potatoes, or clover. Should we quit growing wheat because of low prices in recent years? I answer no; because neither past nor present prices govern future prices of any farm commodity. The principal factors affecting the price of wheat are supply, demand, transportation charges and speculation.

Whether the farmers of Kosciusko County can afford to grow wheat at present prices depends upon the farm, farmer and season; and this will always be found true without much regard to prevailing prices. The farmer growing twenty bushels of wheat per acre at present prices, 70 cents per bushel, can afford it, and he should not be a loser by growing fifteen bushels; but he can not afford to grow five bushels per acre of dollar wheat.

Do we of northern Indiana realize the favorable conditions of both soil and climate for growing winter wheat? The few remaining pioneer farmers can tell us what bountiful crops resulted from a mere scratching of the soil and hand scattering of the seed; and how the grain was harvested, threshed and hauled twenty to forty miles and sold for fifty cents per bushel. Do we fully realize the effect upon the originally productive soil of half a century's cropping; of denuding the land of its timber, thereby depriving the soil of its annual coat of moisture—conserving, humus-making, soil-enriching forest leaves; and how much the constant evaporating surface of marshes, ponds and lakes has been reduced by drainage; and how quickly a rainfall runs off bare ground made hard by cropping the spongy humus out of it; and what water sinks into the ground is rapidly absorbed by the drier air. These changed conditions of soil—and I may add climate, too—were brought about, not by nature, but by the farmers themselves. Are they to blame for it? The timber had to be removed to grow crops; the marshes had to be drained to have better health or, perhaps, to get more rich land. As our pioneer farmers did we would have done under like conditions—but probably not have worked so hard.

But the vital question now is: How shall we meet these changed conditions? When we have learned how best to meet them, the question: Can farmers of Kosciusko County afford to grow wheat at present prices? will be answered in the affirmative, and we will have the key for solving many other farm problems that are worrying us at present.

Since many of Nature's original means of enriching the soil with humus and making it both absorbent and retentive of moisture have been cut off by the farmer, he must provide some substitute that will accomplish these ends and yet interfere least with his desired cropping. Stable manure would probably best accomplish this, but there isn't enough to go around as often as necessary unless it be on a stock farm growing but little grain. If the farmer can afford to let his land miss a grain crop every three or four years, nothing will equal clover if he can get a stand that will stand long enough, and the first or second crop turned under. When you get a good stand of clover don't try to cheat Nature and yourself by removing all but the roots. For a quick growing, go-between or catch crop the soy bean and cowpea are best suited. They are deep rooted, hence stand drouth well; make a large top growth and shade ground well during the usually dry and heated month of August; and, like clover, furnish both humus and nitrogen to the soil.

I presume those following me and the general discussion will bring out the best methods of preparing the ground, seeding, etc., so will only say along this line, commence to plow early so as to have a chance to plow when ground is in good condition with reference to moisture—so it rolls over in a grainy condition; harrow after every rain (if they don't come too often) to compact the plowed-under soil and keep a loose surface; then any time after the middle of September, preferably after a rain, drill in good clean wheat not deeper than from ½ to 1½ inches, and if you expect a full brood of Hessian flies, just sow a peck or half bushel more per acre for the flies' sake.

A little study of the growth of the wheat plant from the grain will make clear my reasons for recommending the above depth and time for seeding. In the germination of a grain of wheat two things occur: sending upward a single shoot to form the stem, and downward and sidewise a set of roots to support the stem. For convenience we will call these primary roots and shoots, the only ones the nutriment in the grain can develop, and after this the sustenance of the plant must come from the air and soil. By a wise provision of nature, in the course of time new roots and shoots are developed, providing the plant has sufficient vitality to accomplish this work; and when not injured by insects, and can feed in a rich soil, and nourished by favorable weather, it never fails to accomplish this extra work. These new shoots or "stools" we will call secondary plants, and the extra set of roots secondary roots. Only one primary plant comes from the grain, but a score of secondary plants may spring from the primary or parent one, and all start from just above either the primary or secondary roots. The secondary roots are always developed above the primary ones, and almost invariably within one inch of the surface of the ground, no difference how much deeper the grain is planted. First a bulb forms from which both the secondary plants and roots start, and the grain and primary roots having fulfilled their mission perish, and thereafter the soil supports of the wheat plants must be furnished by the secondary roots; hence a quick development of a vigorous wheat bulb is all-important to safeguard the young wheat as much as possible against unfavorable weather and insect depredations, and the best means for attaining this are shallow seeding of fully developed grains of unimpaired vitality, in a rich, properly prepared, moist soil; sowing early enough so warm weather will hasten germination and bulb development. If Hessian flies are numerous, sow late enough so the fly season will be about over when the secondary plants or stools appear. This will be found the best plan to get a winter-proof stand in spite of the fall brood of flies, and will also lessen the effects of the spring brood by having a good stand of vigorous well-rooted plants. A number of wheat plants dug up a few weeks ago and brought with me will furnish some valuable object lessons for those interested in wheat culture and will verify and make clear what I have said. (Here deep and shallow rooted plants were shown—some with Hessian flies in the pupal or "flaxseed" stage, furnishing a convincing object lesson in proof of the writer's views.)

For years the United States has been the chief wheat exporting country of the world, and perhaps three fourths grown in the upper Mississippi Basin and a narrow strip along the Pacific coast. Can we, and is it desirable to hold this position in the future? From my point of view I can answer both questions in the affirmative.

With proper reciprocity treaties; with American built ships, manned by American officers, to carry our products to foreign countries and, when desirable to shorten the distance thousands of miles to pass through an American ship canal of a few miles connecting the Atlantic and Pacific oceans, built and controlled by the United States; then with our labor-saving machinery skillfully and economically handled, and with unexcelled inland transportation by railroads, rivers and lakes and rapid and cheap ocean transportation to every part of the world, we can grow surplus wheat profitably and compete with any other country on the face of the globe.

Then the question should be: "How can we grow the most wheat per acre with the least exhaustion of soil fertility?"

A CANNING FACTORY ON THE FARM.

ELMER G. TUFTS, AURORA.

[Read before Ripley County Farmers' Institute.]

The farmer of to-day, to succeed, must take advantage of every opportunity that may be offered in the way of raising such crops as are best adapted to his soil and locality, and such as there is a good demand for. He must also find the best market as near home as possible.

We too often continue growing the same crops that our fathers raised when the soil was in its virgin state, regardless of what our competitors of the West are doing towards supplying our home markets with produce that years ago could be raised here successfully but now is grown at a loss.

If we go into any of the town or city stores, almost the first thing that attracts our attention is the fine display of the many different kinds of canned goods. Upon inspection we find they are generally from the Eastern States and California.

We can not compete with the West by raising corn, wheat and hay, then let us compete with the East by raising fruits and vegetables to supply our home markets at least as well as furnishing a surplus for the canners.

There is no other locality in the State where the soil and climate are better adapted to the growing of fruits and vegetables than that of southeastern Indiana, of which this county forms a part. The clay hillsides and high ridges form an ideal location for peach, apple, pear and plum orchards, and the growing of tomatoes and other vegetables. Yet we find this industry greatly neglected here. The reason for this is, that, in the first place, many farmers have not learned that they can produce better and more profitable crops than what have been grown on their farms, year after year, for several generations past. And then many that have ventured into fruit growing far enough to be able to produce an oversupply of inferior fruit, have become discouraged and turned their attention away from the business, when by devoting more study and work to growing more and better fruit they would have made a success. And the fruit growers in some sections who have made a study of producing the best sometimes find, when harvest comes, that the local market is overstocked and there is fruit in abundance everywhere, and as there are but few commercial orchards they can not ship to advantage to the distant city market where such produce is scarce, consequently the prices are so low that they are compelled to let their fruit hang on the tree or vegetables rot on the ground.

Many of us have passed through these conditions, in some cases year after year, and each season, at harvest, wonder where we could find a market that would return us a fair profit. Many may have wished that a canning factory was accessible; some may have tried to form a stock company in town; but have we ever seriously considered the benefits of a factory on the farm.

While the canning industry has not been long established, less than fifty years, the farmers in many sections regard it as a certain market for their produce, and aid and encourage the continuance of the factory by growing all the produce that can be successfully handled.

Twenty-five years ago Baltimore controlled by far the greater part of the canning industry in the United States. They virtually thought that they not only owned, but had a claim, something in the nature of a divine right, to the business. This was so strong that every factory that started elsewhere, was regarded as poaching upon the rights and privileges of the Baltimore packers. But, little by little, the domestic demand was supplied by the product of a local factory, for there was scarcely any section of the United States where the soil was not fertile enough and the population large enough to justify the establishment of a cannery, until factories sprang up all over the country; business multiplied, the variety of goods packed increased, the market extended, and today we find factories everywhere, extended even to the farm itself, in some cases in the midst of large commercial orchards.

One of the leading canners' trade papers of the country has this to say upon the subject: "The establishment of small canning industries everywhere would tend to equalize prices, and make it possible for the producer to utilize his entire crop, however unusually plentiful it might be, or whatever chance hindrance to the marketing of his produce while fresh might arise. This is the coming industry which will direct the development of farming methods, become the safeguard of the farmer, by equalizing his receipts and protecting him from loss, and stand to the whole country in the place of the well-filled pantry and vegetable cellar of the provident and forehanded householder.

The establishment of a factory on the farm benefits the farmers of a neighborhood by furnishing a good and sure market for their produce. Though it may seem at first that the price received is very low, yet when we take into consideration how, and what amount is handled we will see that the farmers usually receive as much by selling to the canners as selling on the open market.

Another benefit will be derived by encouraging the growing of crops that are better adapted to their soils, other than corn, wheat and hay. A factory on the farm will also be of benefit to a neighborhood by giving employment, at good wages, to the unemployed in the vicinity.

A factory on the farm would also bring labor into the neighborhood, thus furnishing the farmers good help when the factory was idle.

Having given a few of the benefits of a factory on the farm let us see why there are not more established in the country.

The difficulty in the way of establishing and successfully operating a canning factory on the farm in a neighborhood where they have no experience in growing canners' crops is: First. The scarcity in some sections of canners' produce. This, of course could, in time, be overcome if the farmers are willing to grow the produce; but few care to establish a factory in such a locality on uncertainties, when other and possibly better opportunities are offered, where there is an abundance of produce and the farmers willing to grow and sell what they raise. Second. Too great a difference between the farmer and packer in their ideas of price. Many farmers that are not acquainted with the canning industry sometimes think that the packer can pay higher prices for their produce than he can afford to. The farmer's price is often much higher than the actual retail price in the cities. This seems to be the case if the packer is on the farm. I have known some to sell the best of their crop, by the single bushel for less than they had been offered for their entire crop.

In growing for a cannery the farmer is able to grow the produce for less money, as he is always sure of a market, and being sure of this, can grow more extensively—having large crops they can be handled more satisfactorily. It costs less to market the crops, as it saves long hauls to railroad; it saves the crates which are required in shipping; also, the extra expense in packing in small packages, freight, drayage, commission and other expenses.

If tomatoes can be grown at a profit for 20 cents per bushel in other counties, they can in this. If peaches can be grown for 15 to 50 cents per bushel, we certainly can do the same. We see hundreds of bushels of New York apples going to the evaporators and canners at 7 and 10 cents. Can they be grown here at this price? Stop and figure what profit there is in corn, wheat and hay.

Third. Another difficulty in the way is that many farmers are unwilling to make binding contracts to grow and deliver the production of any crop, or contract to grow tomatoes or other vegetables several months before the seed is usually sown. This is absolutely necessary to the successful operation of any factory, because the packer must make his plans far ahead, and in order to do this he must know somewhere near the number of acres he will be able to secure, as this governs his future buying. This future contracting is, on the other hand, of advantage to the farmers, as they know exactly what and how much to grow and that it is sold as soon as grown.

To overcome these difficulties the grower and packer must meet each other half way. The farmers should talk with farmers in other sections who have grown for canners, and find out what their experience has been, and what they receive for similar produce and compare their price with the one they have been offered. Also ascertain if there is any profit in growing such crops at such prices. The farm packer should be willing to pay more, when possible, to his neighbors than the city packer offers, and in most instances this is done. Sometimes this is impossible, for the farm packer labors under many difficulties that can not be overcome in competing with his large competitors where they turn out thousands to the small packer's one, reducing the cost to a minimum with their improved and labor-saving machinery, doing away with much hand labor. In some cases they can sell at a profit to the small packer for less than it cost him to pack the same article.

The only way that a farm packer can pay more for produce and compete with the large factories is by putting up a superior article that will command a higher price. This he can do, as all his goods are hand-packed and thoroughly inspected before being canned. He is also able to look after the details of the business himself and not rely on someone else that is not directly interested. He does not have as much expensive machinery to break or wear out, nor high city taxes to meet.

The chief crops consumed by the farm packer are tomatoes and peaches. The factory can also consume large quantities of plums, apples, pears, and all the small fruits, as well as beans, both green and dry, peas, corn, beets, cabbage, squash and pumpkin, in the vegetable line.

It is not advisable, neither is it necessary, for every farmer to become a packer, for one factory in a neighborhood can consume all the produce to a better advantage than two or more.

It would be to the interest of the farmers of this part of the State to devote more time and attention to the growing of more fruits and vegetables which their soil will produce to perfection, and encourage the establishment of more canning factories on the farm.

HOW TO PLANT AND CARE FOR AN ORCHARD.

WILBUR C. STOUT, MONROVIA, IND.

[Paper prepared for the Farmers' Institute held at Martinsville.]

In writing this paper I have tried to give just how I plant and care for an orchard, and have avoided every appearance of "red tape," so often found in horticultural papers and written by persons who have never planted a single tree in their life.

My experience has taught me that land for peach trees should be fertile enough to produce, in an average year, at least 35 bushels of corn per acre; apple, pear, etc., 50 bushels or more, while for plum, "if the drainage is perfect," it can scarcely be made too fertile. In setting fruit trees, if the land is very poor, after one or two good crops of fruit the trees will be thoroughly exhausted and have every appearance of decay, or else bear leaves instead of fruit, and can usually only be brought to a healthy state by thorough cultivation and fertilization. If you should try to transform sterile soil to fertile, don't fertilize only "just around the tree," but evenly over the entire surface.

Orchard land should not only be, "if possible," higher than the adjacent lands, but should also have good air drainage, so that moisture will not be pocketed up and fall in the form of untimely frosts, thus blasting the fondest hopes of the orchardist.

Now, to get to the actual work: Get good trees, select the size tree you wish, and get the youngest tree you can get to reach the desired size, "always taking care not to get half matured trees, as they will winter kill." Apple trees should be two or three years old when set, usually, but still, to the experienced orchardist, a one-year old budded tree, four to six feet high, is the ideal tree; but it will cost more than the two or three-year-old root graft. Plum, cherry, pear, and nearly all other trees are seldom grown in any other way except as budded trees. Such trees should be set at the age of one or two years, while peach trees should never be planted of a greater age than one year from the bud. Of course, the roots of all trees will be one or two years older.

Secure trees as early as you possibly can and heel them in, in some convenient place to the plot of land to be set to trees. Plow the land as you would for a garden, and work it as carefully as you would if you were going to plant in corn; then give it two or three extra workings, and furrow off the short way. Then take the wire off a checkrower corn planter, and stretch as tight as the wire will bear the strain, the long way; having secured plenty of help, at least three persons. You can successfully use a ten or twelve-year-old boy to carry trees. Bear in mind that trees out of soil or wet packing are as perishable as a fish out of water, and in no case should be in the sunshine ten minutes with the roots uncovered.

Dig hole for setting larger and deeper than the roots extend around check formed by wire and the furrow. Now place the tree in the excavation, on outside of wire from the next row to plant, and fill the excavation about half full of the fine top soil. Press firmly with the feet, finish filling, and leave the tree about an inch deeper than it stood in the nursery row. Leave the top half of soil loose, and proceed with the other trees in the row in the same way until all are filled, then move wire to next row, leaving trees on the far side of the wire from the next row. In setting in this way you always have the trees out of the way of moving over the wire; also by placing the trees against the wire the row is perfectly straight the long way, and you only have to watch the short way to set them in rows both ways. In setting in this way two men and a small boy should set at least forty to sixty trees an hour, of first-class, No. 1 trees. Now we have the orchard set, and our work, in reality, has only scarcely commenced.

The orchard should be thoroughly worked at least every ten days, until the first of July. August would be better. An Acme harrow is the best tool for this work I have ever used. It leaves the soil fine and level and will hold moisture during the dryest weather scarcely half an inch below the top of the soil. At the time of the last working I have been sowing to cow peas and think much of them as a cover crop. The vines should be left to decay and furnish humus. The first frost will kill them and they will be well decayed by spring and the ground very loose and fine. The next spring, as early as your ground is dry enough, take a disc harrow and cut the orchard both ways. This cuts up the soil in fine shape and also the vines. Then drag or roll both ways; then run the cultivator both ways and you have the orchard in fine condition to retain moisture.

Run your Acme harrow both ways about every ten days thereafter until the first of July. If you have no Acme harrow use a weeder or even a spike tooth harrow. The idea is to keep the top soil fine and loose and prevent a crust from forming, therefore preventing rapid evaporation. Sow cow peas about the 1st to 10th of July, and repeat culture every year thereafter unless the orchard is very heavily laden with fruit, in that case cultivate every ten days all summer, or after each hard shower. Winter rye may be used for a cover during winter, in that case, but must be thoroughly killed very early in the spring. In the selection of fruit trees always get standard varieties and if possible the ones that you know to do well in your immediate vicinity. If you will set some new variety, set it very sparingly as at least ninety per cent. of the new kinds of fruit trees introduced are a failure as compared to standard varieties. When trimming newly set trees you need not cut back anything very much except peach, which should always be cut to a cane twenty-four to thirty-six inches in height. Of course in setting other trees, if they have but few roots, or the roots are dry and you don't feel like putting them in the proper place, "the brush pile," you must cut them back severely, also if you are setting overgrown trees that are too large to set use the knife and have it filed only on one side. Pruning is advised but "be careful," cut only small limbs and commence in time. Heavy cutting back of peach trees on off fruit years, especially after heavy crops, will certainly pay as they form new heads in a very short time and seem to renew their former vigor without receiving permanent injury as is the fact with most other varieties of fruit trees.

Spray when needed, and only when needed, but always be ready to spray if needed. This year I have successfully marketed the largest fruit crop I ever did, and the most perfect fruit so far as insects and rot are concerned. I also kept a $14.50 barrel sprayer in the barn, a $16.00 knapsack sprayer in the garret and a keg of Paris green and a large box of copper sulphate in the surrey shed, and they were there all summer, too.

In setting trees I prefer to have the trees much closer in the row from north to south than the other way. Then the top of the tree farthest south will protect the body of the tree north of it from the noonday sun, and in this way the entire row, except the south tree, is protected to a great extent from sunscald. Head trees very low unless you have lumber in view. Low headed trees protect body much better; wind has less effect, and fruit can be gathered for half the sum compared with fruit trees grown especially for saw logs. We now have extended tools for cultivating orchards, and with the limbs to come down near the ground all around the tree. In this way they do not break as they do if headed high. I suppose no wide awake, successful orchardist would think of even hauling a breaking plow into an orchard, to let alone the absurdity of plowing an orchard with one; and you can not emphasize the above statement too strongly.

FORESTRY—PAST, PRESENT AND FUTURE.

J. W. PARKS, PLYMOUTH.

[Read before Marshall County Farmers' Institute.]

Forestry of today has but little similarity or relationship to the vast forests in Indiana forty, fifty and sixty years ago.

When the first white settlers came to northern Indiana, Marshall County was mostly covered with a thick growth of timber.

Upon the building of the railroads, sawmills sprang up in every locality, and until the past few years the amount of timber shipped from this county was something marvelous. I have heard it said that during the ten years from 1850 to 1860 more than two thousand car loads of lumber were shipped from Marshall County each year, bringing an enormous sum of money. The slaughter of timber during these years was like the mowing down of a vast army in a terrible battle, but as the forests disappeared the finest cultivated lands have taken their place, and there are now no better farms anywhere than are found in Marshall County. What is true as to the slaughter of timber in Marshall County is true within the whole confines of the United States.

Forestry for a well-wooded country may mean instruction, and recommendations for removing the original timber. For a woodless region it may mean information for planting and growing forests. In other localities with uniform conditions such as ours, it must mean all of these and additional features as well.

The procedure to be adopted in one region, can not be recommended for another. Surrounding conditions of locality largely determine the need of its people. The person who plants a forest must also recognize that his business will be one of future realization. The crop which the forester grows may be harvested many years from the time of planting. It may be a question of working for future generations. We must not view it, like the gentleman with whom I talked a few days ago, who said, "What has posterity done for me?"

The future prosperity of the State is to be retained largely by supplying forest material to its industries. Forestry is a great problem; it is one that the state and its people must give due consideration.

Forestry as a means to a better agricultural security is equally important to that of manufacturing. Agriculture is dependent on climatic and soil conditions more than any other industry. The lessened rainfall of the past year, which we are told was more than four inches short, the lowered draining of the lands in this State, the more frequent and violent storms in summer, the almost certain drouth, the lessened snowfall and the fierce winds to disturb the snow on the ground, as a protection to the winter crops, is a result in a large degree of the cutting and removal of timber.

Forests by their foliage are sources of rain production. The tree by its cover prevents rapid evaporation. The diminished rainfall in itself does not cause such a marked change in the moisture conditions, but it is the intense evaporation resulting from the clearing out the timber, thereby removing the source which retained the rainfall to the land.

Root and foliage are the main life organs of the tree. The tree is said to be about 60 per cent. water, the trunk and branches serve as conductors to carry the water down in the fall season and up in the spring and summer. The small fibrous roots as well as the larger ones that sink deep into the ground take the water and minerals from the soil and through the trunk of the tree expose them to the light, and under favorable temperature the moisture which is so necessary to our climatic conditions is thrown off into the atmosphere and becomes part of its surroundings.

The growing tree is more or less in all its parts saturated with water, the roots are constantly gathering and conveying it to the atmosphere above. The tree is so active in its work as to become noticeable, hence we say the sap is either up or down. The amount of water carried to the atmosphere is incalculable. Every division of agriculture will be benefited by better forest conditions. A common sense survey of agriculture will show the results of forest devastation and the urgent need of replanting and saving our forest timber.

Viewing forestry from a commercial standpoint, there can be no doubt but that a certain amount of forest planting will be profitable to the owner and helpful to the country. To what extent such planting can be carried on with profit must depend on circumstances. No general system for operation can be proposed, extent and method must be governed by the region of country and its conditions.

It is my purpose, however, to show that the time has come for the most extensive development of forestry and for the preservation of that which we have.

Profit is the only basis upon which a system of forestry can be carried out. Before a man can be induced to plant trees he must be convinced that it will pay. The growing of timber is an investment on much longer time than the growing of any other crop.

Money is invested which can not yield a return for years. No one will begin an investment unless he feels in the end it will be profitable.

From the experience of persons who have used skill and wisdom in the selection of trees, congenial soil and proper management, the results are giving promise of return largely exceeding agricultural crops for the same period of years.

From statistics, and that is the only way we have of arriving at a conclusion, instances show that a growth of 25 years has been made to reach as high a value as two hundred dollars per acre. Experience, however, proves that timber can be grown for certain uses in much shorter time, and when grown has a high value.

And while it is shown that the growing of trees is profitable yet it must be carried on with judgment and skill if satisfactory results are expected; no guess-so probabilities of soil or trees can be taken; no slipshod methods in culture can be used. The same careful management must prevail in tree growing as in farming. For thirty years planting has been carried on, under diversity of soil, moisture and temperature. with all kinds of trees and by almost every kind of method, but in most cases success.

The planting of the best species of our native merchantable trees for the double purpose of commerce and protection should be considered. The planting of waste lands in timber must receive the kindest consideration because it is the best use that can be made of that class of land, but the planting of the best agricultural land in timber would give better profit in proportion as one soil is better than another, not taking into account, however, the protective feature of the premises.

That oaks, ash, elms, walnuts, hickories, sugars and maples are the most valuable kinds to plant for commercial purposes, and will at the same time perform the function of a storm and windbreak. Most of these species are good medium growth timber, and if planted at the regular distance apart, valuable cuttings may be made for commercial purposes in fifteen years, and valuable cuttings may be made each five years thereafter.

There is no satisfactory data showing just what might be realized per acre from such a planting of hardwood timber, but from the prices paid we are insured of a profitable income beyond what could possibly be made from continued agriculture for the same period of time.

The diminishing of natural timber is general in the United States. The valley of the Wabash has been cleared to its banks. Most farmers in Indiana have set aside a few remaining oaks for post timber, and when gone, will have to grow them or buy them. This is true throughout the whole Middle West, there being greater scarcity west of the Mississippi than east. No natural supply from any region of the Middle West need be counted on in the future.

The necessary consequences of the diminution of natural timber is a general rise in prices. Every year finds the natural timber scarcer and the prices higher. A railroad official a few months ago after giving the matter careful consideration estimated the value of cross-ties fifteen years hence at 75 cents each, and that no material has been found as a substitute for the wooden tie and that there is no method of preserving the life of the wood.

What is here said of cross-ties must be true of every variety of timber. The use of these materials must continue and must grow rather than diminish. The estimated increase in the value of the tie 15 years hence is conservative, and it is not unlikely that posts will increase in proportion, and telegraph poles much more in that time.

From every reasonable view, great profit will be made in the growing of forest trees in the next twenty-five years. Every condition is so favorable that the matter passes from doubt to absolute certainty. That extensive operations should be carried on in Ohio, Indiana, Illinois and the Middle States is due to the fact that here the most favorable conditions exist; here the supply of natural products is almost exhausted; prices are higher; soil most fertile and people most familiar with the process of development.

The tendency of the times is toward the smaller acreage of farms, better fencing, and with the hundreds of miles of projected lines of electric railroad, mean a much greater demand for the post and tie-timber product.

I believe the successful farmer will be equal to the occasion, and will meet these demands intelligently by producing on his farm this kind of timber, and will find that a large profit will be made by so doing.

Every farmer can set aside a few acres of his farm for the growing of black and white walnut, black locust and the hardy catalpa. These species of trees are the best known kind for these purposes, most rapid growers, best suited, and are the most durable when in contact with the soil. These trees may be grown on ordinary soil to the number of 2,000 per acre; and they do best on the best soil, but poor soil is better than none at all.

These trees rightly cultivated will be suitable for posts in twelve years, and from twelve to fifteen years be large enough for ties. It is estimated that each tree will yield one, and a majority of them two posts or ties, and by calculation, we can estimate the profit. Two years of cultivation and the harvesting, is probably all that is necessary by way of labor, and the expense of money need not be much.

The area of profitable tree planting 15 years ago was limited to the plains. It extends now to the Middle West. Since the profit of tree growing has become manifest, people have become imbued with it, and there will be more trees planted in the spring of 1902 than in any other previous year, but the number of trees planted will fall short of the necessary requirement. If a million acres of timber should be planted annually the production would not be sufficient to supply the demand.

The Department of Agriculture of the United States has a regularly established division, known as the Division of Forestry. This division is entitled to credit for the progress of the science and art of forestry. At first, and within the last two years, this division was purely a bureau of information. The work of this division is now chiefly in the field. At present the work of this division is given to practically assisting land owners in economic tree planting, growing ana saving.

Applications to the division for such assistance will be considered in the order received. After the application has been made and if considered of sufficient importance, the superintendent or a field agent will visit the land and after adequate study of all the conditions and surroundings, will make a planting plan, suited to each particular case, the main purpose being to help in the selection of trees, and giving information in regard to planting and handling them.

The work of this division is free; it costs you nothing. It defrays the expenses of the agent in making the preliminary examination and plans. It does not, however, undertake to furnish trees or seed, or bear in any manner the expense of planting them.

In the last legislature I was a member of a committee, recommended the bill, and encouraged its passage on the floor of the Senate, establishing the Board of Forestry in this State. While the appropriation provided for in the bill is inadequate to secure satisfactory results, yet it was sufficient for a start, and to create a State Board of Forestry, who were appointed by the Governor and are now doing business, having an office in one of the rooms of the State House at Indianapolis.

I am informed that this board has replied promptly to every inquiry for information and as far as possible given such assistance as is in its power. It is a question to what extent the State shall act in the appropriation and keep within the bounds of its relation to the general public. Legislation follows public sentiment and it is of but little value when it precedes it. I am quite sure, however, that an appropriation will be made from time to time to fairly keep pace with the demands of the people.

This board was not intended as a board of education. Neither the government nor the State takes any part in the education of foresters. Elementary instruction in forestry has, however, received noteworthy recognition in the State Agricultural and other schools of the country; more than twenty now offer instruction in forestry, and it will be but a short time when forestry will be taught in every agricultural school in the United States.

One of the most important agencies of education is the observance of "Arbor Day." "Arbor Day" has made its way from State to State until provision for its observance has been made in almost every State in the Union. Indiana, however, seems to have forgotten it, as I find no provision in our State laws for its observance, which possibly is on account of the heretofore seemingly inexhaustible supply of timber.

The central idea of "Arbor Day" is the planting of trees by school children on dates fixed by proclamation of the Governors of the various States. The planting is usually accompanied by appropriate exercises calculated to impress upon the children lessons from the trees, and to encourage care and preservation for shade and forests. While the planting may have in itself little economic value, the institution of the day may exercise respect for trees in the coming generation, and build a sentiment which will finally bring about a general practice of conservative forestry.

I would urge that our educational authorities encourage such an observance as will impress upon the youth of Indiana the benefits of tree planting from an economic, as well as an aesthetic point of view.

No special program need be suggested. Each County Superintendent should prepare one and publish it in the local papers. The local press is a great educational force, always ready, and more than willing to aid.

It should be used more systematically and continuously than it is.

In addition to "Arbor Day" every farmer in the State should beautify his possessions with trees of our native kind. In and around the outlot, along the lane and roadside should be cherished the oak, walnut, ash, maple and other native timber most hardy and beautiful. And as the few "red men" of today are but relics preserved of the once numerous thousands that roamed the land at will, so are the native trees remaining but scanty relics of the ancient forests.

The old, familiar poem of George P. Morris is exceedingly appropriate:

"Woodman, spare that tree!
Touch not a single bough!
In youth it sheltered me,
And I'll protect it now.
'Twas my forefather's hand
That placed it near his cot;
There, woodman, let it stand,
Thy axe shall harm it not!

That old familiar tree,
Whose glory and renown
Are spread o'er land and sea,
And wouldst thou hew it down?
Woodman, forbear thy stroke!
Cut not its earth-bound ties;
Oh spare that aged oak,
Now towering to the skies!

When but an idle boy
I sought its grateful shade;
In all their gushing joy
Here too my sisters played;
My mother kissed me here;
My father pressed my hand—
Forgive this foolish tear,
But let that old oak stand.

My heart-strings round thee cling
Close as thy bark, old friend;
Here shall the wild-bird sing,
And still thy branches bend.
Old tree! the storm still brave!
And, woodman, leave the spot;
While I've a hand to save,
Thy axe shall harm it not."

THE FARMER'S POULTRY AND ITS CARE.

C. R. MILHOUS, MANAGER POULTRY DEPARTMENT, EPITOMIST EXPERIMENT STATION, SPENCER, IND.

[Read at the Annual Farmers' Institute, Owen County, December 4, 1901.]

The question, what kind of poultry, or, what breed of poultry is best suited to the farmer? is a question not easily answered. Especially so if all are to be satisfied with the selection. This being the case, we will only give the general characteristics of the different breeds for different purposes. From these the farmer must select the breed best suited to the conditions to which they will be subjected.

The success or failure then depends entirely with the one in charge. In speaking of poultry for the farmer, only thoroughbred poultry will be considered. Not that all farmers have thoroughbred poultry, but from the fact that they should have and could have, much easier than thoroughbred cattle or hogs.

Years of experience in crossing one breed with another has always proven a failure. The first cross may make better layers of the one, but a poor laying hen of the other. The second cross is only a dunghill, scarcely fit for anything. Do progressive farmers cross their cattle to produce stronger stock, or their hogs to make more meat? By no means. The farmer's poultry is the last stock on the farm to be improved. And yet no stock pays as good a dividend as does the hen for the amount of money invested if given only half a chance. True, a flock of poultry may be improved by breeding to thoroughbred males. But it takes time to accomplish much of a success in this way. It is much cheaper to buy of a reliable breeder who has spent years in perfecting his stock, a trio of fowls and raise your own thoroughbreds. We consider it time and money wasted to try to improve a flock of mongrels. As to the breed best suited to the farmer, we can only say it depends upon the farmer.

If a farmer has bred Plymouth Rocks for years, it is pretty hard to convice him that the Wyandotte is a better breed. Yet in the last few years the White Wyandottes have taken the place of Plymouth Rocks. For this there is some cause.

For market poultry the demand is for a quick maturing, quick feathering, plump breasted chick, with as few dark pin feathers as possible. The Plymouth Rock possesses a part of these, while the White Wyandotte possesses all of them.

The Plymouth Rock is lacking in the full breast, has dark pinfeathers and can not be forced as rapidly as the Wyandotte. This fact of being able to stand forcing while young is why so many market breeders are dropping the Plymouth Rock for Wyandottes. With experienced breeders the Wyandottes have proven a better winter layer than the Rocks. They also have the advantage of a rose comb, which makes them less liable to be frozen.

The Brahma is not, as a rule, a farmer's fowl. Though a large breed they are slow in maturing, and unless especially bred for egg production for several years, are poor layers. The flesh is much coarser than either the Plymouth Rock or the Wyandotte. A Brahma is never better satisfied than when eating or sitting and the two occupy most of their time. True, there are exceptions to all rules.

One that we are personally acquainted with is a Mr. Woods, of Pecksburg, Ind. And, by the way, he is a farmer, too. This gentleman has been a breeder of the Light Brahma for years. He has been careful in his selection of eggs, selecting from the best laying hens year after year, until he now has a strain that do very little incubating and are splendid layers. I will also say this man has won more prizes on Light Brahmas than any man in the State. This simply shows what can be done by selecting the best and breeding from them.

About the same may be said of the Cochin, as the Brahma, as a farmer's fowl, with the exception that the meat of the Cochin is much finer than that of the Brahma. The Langshan is a good winter layer, but its color, both as to feather and flesh, makes it a poor market fowl. The Minorca is a good layer of large eggs, but a poor market fowl for the same reason as the Langshan. Then comes the egg machines of America, the Leghorns. Not large, but the flesh is fine and juicy when properly cared for. We have other breeds, such as the Indian Games, Hamburgs, Houdans, Polish, the Dorkings, the great French breed, and the new breeds, the Buff Orphingtons and the Rhode Island Reds. But the breeds generally found among the farmers are the Barred Plymouth Rock, White or Silver Wyandottes, the Brahma or the Brown Leghorn. Or, as more generally the case, a mixture of these breeds.

But after all this, the success of any breed depends on the care it gets. The best breed in America will not pay expenses unless properly cared for. Herein lies the success or failure of poultry raising.

Then we have the ducks and geese, and, lord of the farm, the turkey.

To make a financial success of duck raising one must be near a market for young ducks. Yet there is some money in ducks, if after a few weeks of age they are given free range. It is a mistaken idea that ducks must have a pond to swim in. The largest breeders of the East never allow their ducks on the water. These breeders raise from six to twenty thousand ducks every year. All the water they get is what they get from the drinking troughs. Ducks eat at least one-third more than chickens but grow just twice as fast. Most profit comes from ducks when from ten to twelve weeks old. In the East they bring from 70 cents to $1.50 per pair, usually being sold by the pair after being dressed.

In the last few years there has been a good market for young ducks in Chicago. Also for young chicks ranging from 1 to 2½ pounds each.

There is no reason why a farmer should not ship to Chicago and get almost double the money for his stock that he does here. By writing to the Sprague commission house, they will send printed directions how to ship all kinds of fowls and eggs. Farmers who can take advantage of this can almost double their profits on poultry.

In selecting a breed of ducks most profitable there is but one choice, the Imperial Pekin. When fully matured they will weigh from 6 to 10 pounds each. Very few farms are without the lorldly turkey, chasing the festive grasshopper. The turkey's value lies in the fact that they forage for most of their living and destroy so many insects that are injurious to growing crops. Only the one breed is considered as well adapted to the farm, the Mammoth Bronze.

CARE OF POULTRY.

There is no use buying good poultry and turning it out to shift for itself and then condemn it as a failure. Better buy no thoroughbred stock at all. To begin with, we will suppose we have secured some good stock of the breeds above mentioned. About the first essential is the house, or rather have the house ready first. There are innumerable ways of building poultry houses. But for practical purposes that are within the reach of the general farmer, we will consider three essential features—warmth, light and dryness. Houses should face south or southeast, to secure all the sunlight possible. In building your houses always place your windows near the ground, as on the floor is where the sun is needed. No modern poultry house is built without its scratching shed. The floor of the houses should be of mother earth and raised one foot higher than the surrounding ground. This keeps them dry. These should be covered with six or eight inches of straw, chaff or broken hay from the barn. Into this throw all grain, and compel exercise to secure it. Never place one roost higher than the other, but make all on a level from 20 to 30 inches from the floor. If one roost is higher than another all the fowls will want to use that roost. This causes crowding, and the result of this is sure to bring on some disease. Under the roosts should be a tight floor eight to ten inches below them to catch all the droppings. From this floor they can easily be raked off into a basket or box for that purpose. The roosts should be hinged to the wall so as to raise up for cleaning under them. High roosts also cause bumble foot, from hens flying down and lighting on some hard substance and bruising the bottom of the foot. To make a house warm, building paper should be used for lining, otherwise use common newspaper. The object is to keep out the cold winds. If you haven't tried it, just paste newspaper over the inside of your poultry house and see how much warmer it makes it. Be sure there are no cracks or even nail holes near the fowls while on the roost. Many cases of roup, the most dreaded disease in the poultry kingdom, may be traced to some fowl's head being in a draft while on the roost. Then with proper houses and a good breed of fowls the success or failure depends upon the amount of care and attention that is given the flock. Not only the flock itself, but success in hatching eggs from them depends largely on the feed and care of the laying hens. If hens are not fed and made fat, do not expect many strong, healthy chicks. The same is true of forcing hens to lay during fall and winter. When this is done, by spring the hens have not vitality enough to produce fertile eggs. I have been experimenting with different feeds at the Experiment Station, having in view two objects. One to test corn as an egg producer and also to prevent too much laying during fall and winter. Before commencing feeding whole corn, a mixture of whole and ground had been fed. The result was a good egg yield. We then changed the feed, giving the hens only ground corn, and perhaps half the time giving the hens only corn and cob ground very fine. Not over ten days of this feeding was required to reduce the egg yield 40 per cent. One month of such feeding has almost stopped all laying. Remember all these tests were home-made, were on poultry confined to large yards and not on free range.

Corn has its place in the ration of laying hens, but it must be fed with other feeds or the fowls must have free range so they may choose other grains and grasses.

By repeated trials we find oats one of our best grains to feed laying hens or to get them to lay. But grains alone do not make a good egg ration. Some form of vegetable or green food must be given. Nothing that we have ever tried will equal clover hay. This may be fed to the hens in the form that it comes from the field, letting them eat it as they choose, or running it through a feed cutter, cutting into short lengths and feeding with the warm mash. Remember that 1,000 pounds of clover hay contains about 30 pounds of lime, while the same weight of corn contains only 1 pound. It is self evident which is the best egg food. Then for fertile eggs, strong in vitality, I would feed grain in the morning. If obtainable, place cabbage or turnips where they may be eaten at will. Save all small potatoes for the chickens, unless it is a season like the one just past, when all the potatoes were small. These are cooked and mixed with cut clover hay that has had boiling water poured over. This warm meal is given at night instead of in the morning. During winter whole corn may be added to the night feed.

By throwing all grain in the scratching material we compel exercise, and it is the busy hen that lays. Healthy poultry, fed as above, given fresh water and grits of some kind, will produce fertile eggs from which to hatch our coming crop of poultry. How many farmers clean the poultry houses every day, the same as they do the cow stables? Don't expect your fowls to keep healthy sleeping over droppings that are the accumulation of weeks. It only takes a few minutes to remove the droppings if there is a tight floor under the roosts. If your fowls should become sick, see if there is not some stagnant pool of water to which they have access.

As for incubating eggs, there are two methods—with the hen and by artificial means, or in other words the incubator. The hen is, of course, better than the incubator, but the incubator is coming into more general use every year. The incubator can be set and run at any season, but the hen has notions of her own regarding setting. After commencing to set, the hen may conclude to scratch. This, of course, is not beneficial to eggs. The incubator goes steadily on if furnished with oil. It is useless to say the incubator will be a success without careful watching, for it must be cared for to make a success. But the time consumed need be no more than that used in caring for three or four hens. From the incubator the chicks come free from lice, while from the hen they are, nine times out of ten, stocked with lice as soon as they are hatched.

The first feed given our chicks is mica crystal grits or some other good grinding material for the gizzard. After thirty-six to forty-eight hours I feed baked corn bread crumbled fine. As soon as old enough screenings are given them. This is scattered among chaff on the brooder floor. This compels exercise and promotes digestion of the food consumed. As fast as the chicks grow they are given larger grain. I never allow any sloppy feed given young chicks. From the time the chicks are four weeks old they should be forced all they can stand if intended for market. The quicker we can put them on the market the more profit there is in them.

To chicks that are confined we always feed some form of meat, usually dried meat scraps or green cut bone. After the chicks have reached the age at which they should begin laying, and do not lay, there is no profit in keeping them. In fact most of the profit in poultry comes from eggs. Then compare the price of eggs and live poultry to-day in our own town. A few days ago I paid 5½ cents per pound for live fowls; the farmer who sold them first received only five cents. For one dozen eggs I paid twenty-four cents. Suppose these hens had been laying, would it have been wise to sell them at 5 cents per pound when eggs were 2 cents each? Then, as we have claimed for years, the most profitable hen is the one that lays the most eggs. Four breeds tested side by side at the Epitomist Experiment Station proves that the best layers, both winter and summer, are the rose comb Brown Leghorns. The Whie Wyandottes are next, then the White Rocks and the Barred

Rocks making the poorest record. Yet many get good egg yields from Barred Rocks and will continue to do so.

So many farmers seem to get into one old rut and continue to keep the same old stock just because there isn't much in the chicken business anyway. If the man of the house does not want to get good stock, give the women a chance. Usually most of the care of poultry falls to the wife anyway. If she is furnished a warm house for her poultry, with a few good crops, she will make more clear money from her flock of hens than will her husband with his best brood mare. In conclusion, let me urge farmers to improve their poultry and poultry surroundings. Give the son or daughter a chance to own some thoroughbred stock. Buy the boy a pen of good fowls and give him a start, procuring good poultry papers, etc., for his reading, and you will not find your son leaving the farm for the already overcrowded city.

POULTRY.

MRS. GEO. RAY, FRANKLIN, IND.

[**Read before Johnson County Institute.**]

I have been asked to say something about poultry. Have never had any experience with any kind of poultry except turkeys and chickens, and not very much with turkeys, having raised turkeys only two years. I did very well; but they are too much trouble for the profit there is in them.

Turkeys are all right if they would stay at home. No one likes to be bothered with some one else's turkeys, so I will tell you what I think of chickens.

At the first of the year I arrange to have my flock of chickens number about seventy-five thrifty hens. With the hen house cleaned and new nests it is not long before I will have a few hens that will want to sit. I always try to get as many hens to go to sitting as soon as possible, so I can give each hen I take off the nest about twenty-five chicks.

Those I leave on the nest I give fresh nests and fresh eggs, and they will set the second time as well as they did the first time, and with proper care will look as well as when hatching the first time.

My coops are box coops, 20 by 24 inches, with the roof running one way and one side open. This I can set to the south, and with another coop made of slats to let the hen and chicks in in the day-time, I can keep a hen and twenty-five chicks in the worst weather we have.

It is best to feed the little chicks cooked feed for one month at least, and feed in pans or boxes just what the chicks will clean up and no more. It is best to water in iron vessels.

After the chicks are one month old milk may be fed to good advantage.

Chicks hatched in the month of April and May are the least trouble, and grow better.

They should be well fed and kept growing rapidly if there is to be any profit in them.

When the hens are setting it is best to keep a broom in the henhouse, and sweep the house every morning. This will prevent lice from getting a start.

Chickens will thrive on any good, wholesome food; but will not thrive on filth.

The house and runs must be kept clean or poultry raising will be a failure.

The sitting hen must be kept quiet if we want her to hatch well. I always use boxes 14 inches square and 8 inches deep for nests.

It is best for the same person to tend the chickens all the time. This, I think, is the wife's place. She ought to have something on the farm that she can tend and feel is her own; she ought to do all the work for her chickens, except making the coops. This, I think, is the husband's work. She should sell the chickens, collect the money and spend it as she pleases. If this was done oftener our country homes would be furnished much better. The wife would be a better manager, and we would have more chickens.

Seventy-five hens will raise from five to seven hundred chickens a year, which are usually about equally divided. The hens I sell for Thanksgiving, thereby avoiding any of the bad weather; the capons I keep until after the holidays.

Some say an old hen will eat her head off. So will a cow if we don't try to make a profit off her. We will see what seventy-five hens will do if they have proper care. We can sell four hundred chickens, which will bring us two hundred dollars at the least; then we can sell 300 dozen eggs during the year. Not wishing to add any extra trouble, I prefer selling them at the door. By so doing they will bring me about 12 cents per dozen, which will make $36. Fifty bushels of corn will feed the whole flock and fatten the capons—this, at 50 cents, is $25. $200 for chickens and $36 for eggs is $236. $236 minus $25 equals $211 clear, and you have your hens left. Has she eaten her head off? Have you made a greater profit on anything on the farm for the amount invested?

If I, a farmer's wife, can do this with all the cares of a home and family, what might anyone do who could devote all their time to it?

CARE AND MANAGEMENT OF BROOD SOWS.

JOHN G. EVANS, LETTS, IND.

[Read before Farmers' Institute, Decatur County.]

Hog raising is a financial issue. The problem now before us is what kind of hogs shall we breed, and what shall we feed to produce the most dollars and cents in the least time and with the least feed? On this point there is a diversity of opinion between farmers, breeders and professors of agricultural colleges, but not so much on the feed as on the breed. We all have some idea as to what we want in the shape of a hog, some preferring one kind and others something different; and with some color makes considerable difference, and they will sacrifice some quality to obtain the desired color, while knowing that the market price will not be affected as long as the hog carries the required quality and finish. The selection of the sow is the first and most important matter for the breeder to consider. Some people are satisfied when they have a sow that will raise a large litter of pigs, but do not stop to consider either the feeding qualities or early maturity, or symmetry in form, which is so very essential in the foundation of a herd; while others, by following another line of selection and by too exclusive a corn diet have produced a sow that raises so small a litter of pigs as to be unprofitable. Viewing this subject from the standpoint of the general farmer who raises hogs for feeding, and who is already in the business, and assuming that he has exercised at least fair judgment in the starting of a herd, we recognize the fact that the only practical and economical thing for him to do is to select most of his brood sows from his own herd. And in making his selection he should adhere to our unswerving rule, and that is in all cases and under all circumstances to select and keep for his own use the best. It is fair to assume that he has studied the subject until he has a more or less fixed ideal of a brood sow. Or, if he has not done so it is his duty to study the question until in his selection, either from his own herd or from that of his neighbor, or from the herd of a professional breeder, he shall obtain a type somewhat of the following description: First, she should be large, with plenty of bone and length; good depth, with short, wide nose, which denotes strength; wide between the eyes and ears, which denotes intelligence; wide between the forearms, a full neck, a well filled heart girth, and a well sprung rib, which denotes good lung power; an active heart, and a robust constitution. Then comes the straight, wide, slightly arched back and shoulders and hams to compare, all put upon four straight, stout legs, well set out on the corners. Then, in order that this standard may be maintained, proper care should be exercised in the selection of the male to which they are to be bred, as it is generally recognized that he has half the influence upon the future herd. And now having our brood sow selected, and the male to which she is to be mated, we come to the consideration of our subject proper, "The Care and Management of the Brood Sow." The most important factors to be considered are shelter, proper feed, cleanliness and exercise. Good shelter is necessary for obvious reasons, not necessarily expensive buildings, but the shelter must be warm and dry. Cold drafts must positively be avoided, especially after the arrival of the litter, as pigs and young hogs are perhaps more susceptible to colds and pneumonia than any other animals. Cold drafts will produce these afflictions sooner than you think, and when the pigs once contract these diseases they are only a little way from the grave. The nest is of prime importance, and must not under any consideration, if the health of the litter is to be maintained, be allowed to become either damp or dusty. And, to accomplish this requires great care and close attention. It can perhaps best be accomplished by use of plank floors and frequent changing of bedding, and by providing a separate place for the sow to eat. Stone and cement floors, while all right to feed on, are to cold for sleeping quarters. In order to acquire the best results from your breeding, it is necessary that your sows should not be too fat, rather a little thin and on the upward turn on moderate feed, as, under those circumstances, your sows and male both are more apt to be healthy, strong, and vigorous, which is very necessary in order to produce a large, healthy, strong litter of pigs. After breeding it is also necessary that your sows should be dieted in order to obtain good results at farrowing. By dieting, I mean that the sows should be fed diversified feed, which has a tendency to produce more bone and muscles than fat. It is to the detriment of both the mother and the young to feed a full corn diet at this time. I have had very good luck with my brood sows by feeding them one-third oats, one-third shorts and one-third corn ground and soaked twelve hours before feeding; but I allow them to take plenty of exercise at this period of time. The brood sow should also be provided with the range of a good clover or bluegrass pasture if possible, and at any time should at least have plenty of range for exercise. A correct record of the date of breeding should be kept, in order that the sow may be allowed her liberty up as near to the time of farrowing as possible, and yet no risk be taken of allowing her to farrow among the other hogs.

Two or three days before farrowing she should be put by herself where she will not be disturbed by too close proximity to the other hogs, her nest looked after carefully, which should be dry and clean, but not too abundant. All this, if you have kept upon the kind of terms with your hogs that you should, has been accomplished without running or unduly exciting the sow.

She should now be given a light diet of sloppy feeds until the litter arrives. It is conceded by experienced breeders that for the first three days of the pig's life its dam should be fed very moderately on thin slop. Heavy feeding at this stage will produce a greater flow of milk than the little fellows can consume, leaving the surplus to fever and curd in the udder, which in turn will prove disastrous to the life of the pig. The feeding of sour swill while the pigs are young will also produce evil results, usually causing dysentery, and when this trouble once assumes an aggravated form, it is most sure to claim some of the best of the litter as shining marks. It is probable that more pigs are lost by improper feeding of the sow during the first week of the pig's life than from any other cause. About a week will be required to bring the sow up to full feed, and then rush the whole family along till weaning time.

It has been my practice to allow the pigs to run and feed with their dams till about ten weeks old, at which age they will practically have weaned themselves. At this period a separate pen should be provided in which to slop and feed the shoats, leaving the old sow to weep and wail on the outside. A couple of ears of corn would be good for the old sow, but if it is intended to keep her over for another litter her principal food should be grass. It has been my practice to clean out the sleeping apartments at least once a week and oftener if the bedding becomes damp and soiled. Damp bedding is about as disastrous to the thrift of the pig as cold drafts. I have also made it a business to feed salt and ashes freely, which will serve as an appetizer and conditioner of the digestive tract. A good fill of slop once a day made of shipstuff and bran, with a little oilcake added, a liberal feed of corn night and morning on a stone floor or clean dry ground, access to pure water and the range of a good pasture for variety of feed and exercise, will fill the bill for a balanced ration.

This formula of course applies to summer conditions, but may be approximated in the winter care of swine by a little forethought. But no matter how fine the food or how expert the care, the razor-back or scrub can never be fed to produce the model hog.

As the final success of the litter in the sale or show-ring is the principal inspiration for the extra care of the litter, good blood becomes a paramount factor. Good form and quality are always at a premium and ready sale, and to achieve the greatest success good blood, selection and proper mating should be counted as prime factors in the care and ultimate success of the litter.

RELATION OF HOME LIFE AND DIET TO COOKING.

MRS. S. S. HARRELL, BROOKVILLE.

[Read before the Farmers' Institute of Brookville.]

Because of the opening of the markets, the modern cook has many advantages over the pioneer mother, but there is room for doubt as to whether she uses them to the best advantage. Some of us remember the plain, wholesome dishes of our grandmother's day. No canned goods, preserved with poisonous acids, were found upon the table—no pickles spiced into a delicious morsel, whose keeping qualities are found in the adulterations used in the embalming process. In the olden times our preserves, fruit butters, pickles, etc., were purely home-made products with no foreign substance about them. The housewife simply showed her skill in using what nature brought to her hand and the fruits were preserved or dried in their own juices, and pickles were put up in the juice of the apple fermented in the usual way—unaided by various substances whereby one barrel of apple juice may be converted into a dozen of vinegar, or even sweetened water turned into "pure cider vinegar."

It is true that seemingly better results are had with this commercial vinegar than the home-made product for the very reason that these preservative acids are so abundant in its make up that the articles are at once embalmed and decay arrested. But what of the stomach that makes an effort to assimilate such stuff. Is it any wonder that diseases of the stomach are becoming the all absorbing topic of the times? Our local paper had it in its locals last week, "good cooks are more in demand than saints these days," and that "dyspeptic remedies were reaping a harvest." Why is this? Don't you think the cause might be found after some intelligent investigation, and is it not a matter worthy of our earnest consideration?

We have all gone astray in the matter of diet. We have had too much of a kind and not enough of the mixture that holds the balance and keeps all parts of the human machine in good healthy order. How to get back is the thing that now concerns us most. Students of hygiene and health may point the way, but each must act for himself and thereby learn of the things best suited to his condition.

Diseases and their causes are becoming a matter of more general intelligence. We no longer depend upon the physician to come in with a dose of quinine or nux vomica, but we wish to know something about the whys and wherefores of such remedies. In looking for them, too often we find that improper, or too much food has as much to do with the conditions. As a result we turn with more interest to all such subjects and in a manner regulate ourselves accordingly, that is, when it is simply a case of food.

The subject of foods and their preparation is a complicated one and deserves serious thought. We can not expect to counteract years of abuse in a short time. It should not be such a difficult thing to grasp the situation and make a start in the right direction, if we go at it as most mothers do the care of their children, as a labor of love, freeing our minds from all thought of drudgery or debasement as connected with every phase of our household economy.

However, we seldom find a woman now who will speak of household cares in a degrading way—that, too, is a matter of education. The modern girl in most well-to-do families now, rather prides herself on her knowledge of practical household duties and finds them not incompatible with higher education and parlor accomplishments. The culture which education gives makes them realize more fully than has ever been done before that to get good service from the employed you must be able not only to direct, but know when a thing is well done and the amount of material necessary in the doing. This takes knowledge, foresight and the skill of a military general to get the highest results. It also takes hard labor as every housekeeper knows. There are times when work will crowd and such conditions are unavoidable. The same is true of men in the factories, fields, offices and storehouses. Work will crowd at times and the only thing to do is to do it with as little worry and friction as possible. It is more often worry that hurts than the work. In no department of life's obligations does wrong conception of duty work greater evil than in the home. Many of us are still old-fashioned enough to believe that every avenue leading out into the world takes much coloring from the home, and success or failure dates back to that spot. If we would send out cheerful workers let the pitch be taken at the breakfast table. Much has been written and said about the evening fireside—poetically treated in song, the gathering together—the day's work done, beautiful companionship and all that but whoever wrote or read a poem on the breakfast hour, the time of all times that gives tone to the day's work, making it possible for the evening gathering to be a restful and a joyous occasion.

Family good fellowship over the morning coffee when the duties of the day are laid out, will rival any time the evening tea, when weary with the day's cares. Breakfast served in sections is not a very enlivening occasion for anyone, and usually leaves the cook in a very unamiable frame of mind. Hence some of these little things knock all the poetry out of the evening hour. It is management and foresight that regulates all these little affairs. It is of no use to envy Mrs. Blank because she has such a happy household and seemingly everything her own way. Better try to find out why Mrs. Blank is so fortunate. You may be surprised to learn she has no more at her command than you, that it is system and faithfulness in detail that makes things move more smoothly, with better results. She is given more time for other matters, a thing greatly to be desired if we would keep out of ruts and that tormenting complaint of the everlasting grind of household duties.

There is more in this phase of the subject than many of us are willing to admit, no doubt, but this is a day of progression, we see it exemplified more and more each year. We may now use the term art and originality in connection with our home affairs without a fear of bringing a sarcastic smile to the face of some big-hearted lord of creation, who once might have claimed that he never had heard of such a thing. Now we know he has heard of such several times. Gruffly as he may allude to it you may be sure he is very happy to see every application of new and better methods applied to his own domestic affairs, especially those that touch his food supply. He knows and can appreciate a good thing when he sees it, and he soon comes to fully understand that there is no better field for art and originality than that offered three hundred and sixty-five days in the year three times each day to the manager of his own home. Here also it is a matter of education, tempered and seasoned with good, hard, common sense as we shall see. In our reading along these lines we find much that is helpful as well as much that is useless and misleading.

The so-called Woman's Magazine and Woman's Column in the newspapers gives place to many things that are utterly useless, ofttimes an insult to the intelligence of the average reader. They are written by impractical theorizers and published by people who do not know wheat from chaff on such matters. Here our practical common sense must hold the balance until we sift for ourselves. Even the famous cooking teacher Mrs. Rorer, concocts dishes out of left overs that would turn the stomach of any well bred country cook, and the so-called economy in many of these left over concoctions is more than over-balanced by the additions needed to get them up. If what is left over is not sufficient in quantity and quality to again appear upon the table in practically its original state, little good is to be gotten out of them made into a salad with a curled parsley ruffle, too often an indigestible mess because of mixture. Please remember that there are exceptions to this rule.

When we speak of foods we feel that the most conspicuous fault in our diet is want of variety. It would be impossible at this time to follow out the whys and wherefores of a well arranged variety in our table service and show its advantages. But there are sources from which we may glean valuable information, sufficient to start us in the right direction, all of which in time will become invaluable to us as housekeepers.

It is the preparation and combinations of which much could be said, that cuts the important figure in his food supply, as it relates to the health and strength of himself and family. We have often heard that the costliest of all roadbeds to a traveler is what is known as a rut. After an observation of many years, wherein I believe I can truthfully assert that I have taken pleasure in what pertains to the home, I find that the rut along the public highway is probably not as disastrous as that which may take place in our domestic economy. They are so easy to get into and so hard to get out of. Monotonous sameness in our food supply is disastrous both from a physical and artistic standpoint and is no longer excusable in those of even modest means. More often where such conditions exist it is a lack of energy rather than a lack of supplies. I wonder how many of us alternate the use of the ever handy potato, with beans, peas, cabbage, carrots, turnips, tomatoes, spinach, onions, beets, parsnips, cauliflower, hominy, dried corn, fruits and other things equally as important in dietary combination. All these things judicially added to the diet in their best season would beat patent medicines every time and cost much less. Every one of them contains some property useful in healthy food supply. We buy celery compound by the bottle. Why not grow celery in our gardens. We go to our drug stores for powders and pills, containing the same ingredients found in moderate quantities in that part of our food supply which is most frequently neglected. It is not because these things are hard to prepare, for they are not. It is either habit—that rut you know—or indifference that makes us overlook them.

Some years ago I made this statement—that one of the most powerful aids in solving the drink habit must come from our kitchens. I still think that a well fed, properly nourished man or boy will have little appetite for drink. I have since talked with those who from actual observation among miners and workmen of that class, have found that many of the workmen who spend about half their earnings on drink is because the other half is so poorly managed in the preparation of food. Poorly cooked and no change, bread, meat and potatoes and meat, potatoes and bread, always in the same way.

The stomach was filled, but the appetite was unsatisfied which ended in a longing for something which he tried to satisfy with beer, the thing most accessible. From the beer bucket he goes to the whisky bottle and from that to ruin. The original cause not always the hard conditions of his life or because he meant to go all wrong, but an unsatisfied appetite, a thing he did not understand, opened the way, his bread, meat and potatoes and meat, potatoes and bread, three hundred and sixty-five days in the year was too much for him. The saddest part of it all is that he did not know why nor did his friends, but rather attributed it all to the depravity of his nature. This is no over-drawn picture. The thing might be brought home where we little expect it. We have much to learn all along these lines, and the best of it all is there is an awakening and a determination to know more about these great living questions each year. The new woman instead of being a politician will be a better hopsekeeper. I say this in no disparagement of the past, believing that as a rule the masses have always done their best under the conditions of their lives, their education and environment.

SANITARY CONDITIONS OF THE FARM HOME.

MRS J. M. CHILLAS, SOUTH BEND

[Read before St. Joseph County Institute.]

Properly speaking the sanitary condition of any locality means the relations of that locality to the health of its inhabitants. The sanitary condition of the farmer's home refers to its healthfulness or unhealthfulness. This subject is attracting more attention than it ever has before, and it is bound to receive still more consideration in the future. In the past it received almost no attention whatever. The early settler here usually thought only of hurriedly furnishing a shelter for his family, and without knowing whether the locality chosen would be healthful or unhealthful. The result was that too often his cabin was located where the seeds of disease would germinate and grow. The farm dwelling should be located on a high, dry soil with natural drainage if possible. Low, level, damp locations breed malaria and fevers, and are also prolific causes for colds, coughs and consumption. Great care should also be taken that the house be not located where currents of air will carry the poison of decayed vegetable matter from low lands. Having selected a healthful location, the construction of the house is not less important. The walls of the building should be so constructed as to admit air between them, otherwise the rooms are likely to be damp. Windows should be sufficient in number and so arranged as to furnish both light and ventilation. A bath room should be considered a necessary part of every farm home, and could be so constructed that it can be heated separately or through pipes from a range or large cook stove. There is no reason why every farmer could not have his own bathroom. A large tank could be erected in the attic, and connected with a windmill and water forced there by means of hydraulic lift pumps, thereby giving plenty of pressure for water. Large cesspools could be easily made to receive all the drainage from the bathroom. Some farmers might think that these ideas were rather exalted for farmers, but we know of one farmer, whom everyone considered an ideal farmer, and it was truly said of him that his home contained the finest bathroom contained on any farm within the commonwealth of Indiana. We refer to Ex-Governor James A. Mount. Care should be exercised also in the location and erection of the other buildings. The barn should not be located on a higher level than the house or too near it. It should be so constructed that the animals, too, may have fresh air, light and sufficient warmth. It is said that a merciful man is merciful to his beast and in no way is this more essential than in the daily care and in providing for their comfort. The henhouse pigpen, corncrib, implement shed, smokehouse and icehouse should all be constructed on the same general plan, that must and mildew will be avoided at all times. For, while not, strictly speaking, a part of the home, these things are all intimately associated with it. Here let me briefly say that all well-managed farms should have their own icehouse. Many a farmer spends money foolishly that would pay for the erection of an icehouse and that would be a blessing to his wife and daughters in the making of butter and handling of milk and cream on the farm.

One of the chief sources of disease is the water supply. Impure water and impure air are the most prolific causes of disease. Arrange to provide clean, unpolluted, pure water for man and beast. If proper sanitary requirements are complied with after building a home, the farmer may reasonably expect his family to be healthy. On too many farms filth in abundance in one form or another is permitted to accumulate about the premises, furnishing breeding places for disease. This should not be permitted. The litter from the stables, pigpen and chicken-house should be carted away frequently and applied to the soil. Disinfectants should be used frequently, and there are many with which farmers should be familiar, such as lime scattered about the premises and a little copper is added to good advantage if used as a whitewash. Bichloride of mercury combined with alcohol is a most efficient remedy against all vermin. Many others could be added, but there is one article which should be in every household. This is permanganate of potassium. By its use it can be determined whether drinking water contains organic matter. If the water is pure this article will impart a beautiful purple color, if organic matter is present the color will be a dirty brown. If farmers will interest themselves more in the health of the community and have frequent discussions of this subject before bodies of this character, it may prove helpful in bringing about a better sanitary condition throughout the country.

SANITATION OF THE FARMER'S HOME.

MISS FANNIE NOE, LAPORTE, IND.

[Read before Laporte County Institute.]

Sanitation has been studied by the scientist and the philanthropist so long and so well that the conditions which make the populous city or the isolated country dwelling healthful or unhealthful are thoroughly and generally known; but the great mass, even of thoughtful people, look upon it as a science whose only scope is to change a pest-ridden, epidemic-breeding city into a healthful resort, not pausing to consider that the same conditions that hatched death in plague-stricken Havana will develop typhoid, diphtheria and kindred scourges in the lonely country home.

Pure air and pure water being the absolute essentials of life, soil, exposure and drainage should be carefully and intelligently considered in the selection of a site for a dwelling.

The location should be higher than the surrounding land, should be distant from other residences, and should have neither high hills nor dense forests in close proximity on the east or south, for the first affects drainage, the second may bring infection, and the hills or woods may shut off the sunlight which is nature's great disinfectant.

The soil should be porous—permeable—such as permits the rapid escape of the surface water and prevents the formation of stagnant pools, which are ever a dangerous neighbor.

Coarse gravel, sand, gravelly loam and rock, if sloping, are, from a sanitary point of view, good; while clay, marsh, and filled soils are bad, the very worst, perhaps, being a porous soil with a substratum of clay, which serves to hold the water in the surface soil, making a disease-creating cesspool.

The cellar of a house, built upon clay, marsh, or filled land, should extend under the entire building and ought to have a cement floor because the air of the house being warmer than the earth below, will suck up the noxious exhalations of the soil; for this reason, also, no dwelling should be built upon the ground.

In all directions the ground should slope away from the house, so that water will flow from not toward it, thus avoiding, as much as may be, damp walls and cellars.

The site being good and the home well built, care must be taken to admit pure air freely, but there can be no pure air if the surrounding yards contain masses of decaying vegetables or reeking pools, whose exhalations taint the air.

Cleanliness without is as necessary as cleanliness within, and watchful care is required in this, for not always can noxious vapors be detected by the sense of smell, as some very harmful gasses are nearly odorless.

Pure water is always needed and very often not present, hence the location of the well is of the greatest importance, and convenience is not the first consideration.

The well water should not be surface water. There is, at varying depths, an ocean underlying all the earth, which we call living water level. This ocean has two movements, one lateral, ever flowing toward the sea, the other vertical, rising or falling as the season is wet or dry. The well should reach this living stream. It may be given as a maxim, nearly always true, that shallow wells are dangerous. Avoid wells that are less than fifteen feet deep, and quarantine those that are less than ten. A well in which the depth of the water varies greatly is also dangerous, as it indicates that the surface water flows into it, and surface water is ever unhealthful, for it gathers innumerable disease germs as it seeps through the earth. Driven wells lessen the danger from this source very materially. It is an established rule of sanitary science, that no vault, cesspool or compost heap shall be allowed within 100 feet of a well. How often is this disregarded and in how many instances is the desire for convenience permitted to out-weigh all other considerations, and the barn yards placed near the house so that the one well may serve for the stock and the house. This economy may still be accomplished and not at the cost of health, if the well and an elevated tank are placed near the house and the water conveyed to the stock trough in pipes.

Abundant sunlight and absolute cleanliness are the chief means of preventing disease, and each one can secure these upon his own premises, and by placing his home at a sufficient distance from the neighboring dwellings, the danger from infection can be minimized.

Perhaps the most instructive and forcible lesson, as well as most horrifying, is the record of the terrible plagues that swept over Europe during the Middle Ages. It is estimated that one-fourth of the inhabitants of Southern and Western Europe perished, but one race escaped unscathed. So marked was this immunity, that this people were accused by the stricken people of having poisoned the wells of the Christians and many were massacred. The wells were indeed poisoned, but it was from the unclean yards and reeking vaults of those who were immolated upon the altar of their own uncleanliness. The Jews, forced by race hatred, to live separate from the other races and forced to be clean by the rigorous and unbreakable law of Moses, lived in health while all the Gentile world was wrapped in the pall of death.

The lesson as to cities has been so well learned, and sanitation is so perfected that to have the smallpox ought to be treated as a crime.

and he whose home develops diphtheria is guilty of a crime against humanity.

To make the country home perfect in sanitation, build upon good soil or protect against infection by cemented floors; keep the surrounding yards clean, as clean as the housewife keeps her house; see that no vault, cesspool or mass of decaying matter vitiates either the air that enters the house or the water that is used for drinking or cooking; admit the glorious sunlight freely to every room in the house, and see that the air of the dwelling is often changed, either by ventilating shafts or by opening windows, for we can always do the latter if we are without the former.

Do not keep the blinds drawn or the curtains down for fear that the sun will fade the carpets or the rugs. The darkened room may be a preservative for the colors of the furnishings, but in the darkened room the germs of ill-health hold high revelry and the more terrible fading will be in the cheeks and eyes of the wives and daughters, whose duties keep them in the infected air.

It seems unpardonable, in this day of almost perfect knowledge, that there should exist a single unsanitary country home.

TRAINING OF THE HOME-MAKER.

MRS. JOSEPH SAUNDERS, ANDERSON, IND.

[Read before the Madison County Institute]

A lady said to me, "You have not had experience, you will have to talk from observation." I answered not a word. To myself I thought does it take more sacrifice, or love and patience? does it take more care or sleepless nights to raise a daughter than a son? You mothers who have raised both can answer.

Some one has said, "God's best gift to man is woman." Is she? If she is a helpmate, such as God intended, a sharer of his burdens and sorrows of life, as well as the pleasures and joys, one who cheers and encourages the husband when clouds of adversity seem darkest, then she is.

Home is the sweetest place, or the most miserable. Home is where our loved ones dwell. Some of you older ones go back with me in memory to the log room with its two beds, and underneath these the trundle bed. Oh, the trundle bed, with all its memories! The sisters and brothers gone from among us. The log room with its shed kitchen and board ladder, that led to the loft where the older ones slept; the father who by the light of the fireplace sat with you on his knee and told you stories of bear and other animals. Then from the kitchen came mother, with her knitting, and joined you at the fireside.

Home—happy memories.

It takes something to make home besides work. The woman who slaves all day long hunting imaginary dirt, never happy unless she finds it, is miserable herself and makes her whole household uncomfortable. I believe in cleanliness, and a tidy home, yet that is not all that constitutes a happy one.

Money will not buy a happy home. Money is very nice if you can have love, honor, and a good character; all that go to make a home.

I once met a young married couple who had started right. He had built a little nest of a home to take his bride, paying for it by the month. They were saving and industrious. In my presence a gentleman pressed them to spend an evening with him. The wife said, "We should like to, but my husband loves his evenings at home so much I can scarcely persuade him out an evening." I thought, may she always make his home so pleasant he will never have to meet a man down town or some other place more pleasant than his home.

Husbands have just as much to do in making a pleasant home as the wife. Yet my talk is not to the husbands, but to the wives. The most beautiful picture I ever saw was of two children of seven giving their first kiss of childhood love and friendship. At seventeen the kiss of love, faith and trust in each other for the future, and at seventy, after fifty years of cares, sorrows and joys, their kiss of faith and trust in each other rewarded. And as they go to their long home, I imagine they have left behind memories of what home really is.

Some say begin with the grandmother to teach a child. I think sometimes we should go farther back. I shall begin with the mother. All over this beautiful world are bridal veils and marriage vows, and everywhere mothers and fathers are lifting up to God hearts of thankfulness and praise for the gift of a little child. The innocent, pure mind of a little child, like unto wax so easily does it hold impressions. How careful we should be of the training of that innocent mind. How easy to influence for good or ill. I do not wonder Jesus saying, "Of such is the kingdom of heaven." When a child comes into a home it is the home influence that molds its character. How careful we should be to have that influence good and elevating.

Fathers have their part in this work, yet it is the mothers who fit and shape the future of the girls of today. The wife and mother of the future; the mother who rules her daughter from the cradle to womanhood with patience, kindness, and love, does not whip or scold. I knew a mother who whipped because she was told it was right; she being very young had gone to older mothers for advice. The child, a loving boy, one day after he had been corrected with the whip, climbed on his mother's lap while the tears were yet in both eyes and heart. Now the mother's heart was sad, too, and with her arms about the child she said to him. "Why is it mamma has to whip her boy?" His answer was, "Oh, mamma, I don't know; it seems the more you whip me the worse I get." And like a flash of light, the mother saw her mode of correction was wrong. She laid aside the whip and studied the disposition of her boy. He is today a man raised only by love and patience, a blessing and an honor to his mother. I knew another mother who worked so hard to get rich, she had neither time nor patience with her children. Love she had after a certain kind. They grew rich. Large houses and barns, hundreds of acres of land, everything but a home. There was whipping and scolding all day long. The children were quarrelsome. On their faces you read contention and strife. You felt the very atmosphere of the house was full of discord. All the better sentiments were swallowed up in one great desire, riches. Is this home? I stood with that mother by the grave of one of the little ones, and I said in my heart, I am glad it has gone to rest, where the wicked cease to trouble and the weary are at rest.

I know a mother who has little of this world's goods, but a large family, yet she is kind, patient and loving in her family. No cross words or whipping. The children are respectful one to another. There is written on their faces love and kindness. Their house is only a log room with a loft and kitchen, yet the love and patience of that mother makes it home. I stood with her beside the casket of one of the fold, and as we looked on the little, cold face, her heart bleeding and torn, she lifted up her voice and said, "The Lord giveth and the Lord taketh, blessed be the name of the Lord," and I knew she went back to her family a chastened and a better mother, more able to bear the burden and to teach the way of life to the ones left behind. I saw her daughters grow to womanhood, and go out from their mother's home an honor to their mother, and a blessing to their husbands. It is largely the home life of a girl that forms her character. Let us now consider the child's school days. She must have exercise to develop muscle and rest the brain; she enters high school, she needs physical exercise to balance the mental strain on the brain. It is well for the daughter to think of the tired mother who toils all day long for the comfort of her family. Mothers, teach your daughters to help you. Do not make the mistake that she is too tired after studying six hours. True, the brain is tired unto dullness; now rest the brain by a change. Let body and mind for awhile run in a different channel from her studies. Her brain power will be the stronger and brighter for the change.

If your daughter desires it, and you can afford it, send her to a good college. A thorough education, combined with good common sense and a right home influence, makes a model daughter.

All through the years mother and daughter should be companions. Mother teaching and encouraging, the daughter obedient and confiding. Mothers, have you the confidence of your daughters? Many sorrows and heartaches would be saved, besides the many pleasant hours you could enjoy together.

When school days are over and the daughter comes out in society the mother still keeps in touch with her. The sensible mother does not make a kitchen drudge of herself, and a parlor ornament of her daughter. She teaches her the art of cooking, housekeeping, and home making. These are graces of the highest order, and ought to be classed on the list of high arts.

The woman who is able to manage in her kitchen as well as to appear in her drawing room, is truly an accomplished woman. Whether rich or poor every girl should be taught what constitutes a home, and how to manage it.

Last, but not least, she is taught the sacredness of marriage, and the sanctity of motherhood. If girls were taught more of the realities of married life and less of the story-book side, we should have happier homes and less of the sorrows of life that bring about so many separations and untold shame on innocent children.

THE WIFE'S SHARE.

MRS. BELLE HARDING.

[Read at Farmers' Institute, Corunna, Ind., January 13.]

Mr. President, Ladies and Gentlemen—It affords me great pleasure to find a place on the program this afternoon, to be permitted to address this intelligent audience; an audience which represents the class of people upon which the world in general depends for the sustenance of life. A class of people to whom the politician, the statesman, the banker, the millionaire and all laborers except the farmer must alike look for food to supply the daily wants of themselves and families.

The strikes among miners, manufacturers, railroad men, street car employes and, in fact, almost every kind of employment, is a common, every-day occurrence, and brings depression along that line while the strike continues. Men are thrown out of employment, others take their places, and with perhaps a few changes in a short time the work goes on.

But what would it mean should the farmers make a strike, cease their form of labor for a few years or even months? Let me tell you, kind friends, it would mean starvation or death. Men would lose their jobs for want of food. Their wives and children or other dependents would fall by their side for want of food, and we would witness more distress and more misery than can be pictured by the finest artist the world possesses. But we are glad to note that the farmer never strikes. He toils on year after year at the hardest kind of labor, endeavoring at any rate to provide food for his own family. All through the spring, summer and autumn he may be seen in his fields tilling the soil, sowing or reaping. As compensation he has the blessed satisfaction of seeing his granaries filled to overflowing with provisions for his stock. In his cellar there is an abundance of potatoes, apples, etc. In another place hundreds of pounds of meat, which has been killed and cured in the best possible condition. Plenty of flour, milk, butter and eggs are provided, and the farmer lives well. He looks out for himself first, then if there is anything left it goes onto the market, and the one who manages successfully will always have a surplus over and above his living.

But someone asks, "What has the wife been doing all this time? Has she been sitting idly by, enjoying the balmy breeze on the front porch, or perhaps strolling in the orchard or some other cool place when the thermometer registers 100 degrees in the shade, and she, having no part in this toil enjoys the ideal country life which is painted to us by novelists?" I emphatically say "No." She has her hardships of life, and every true wife, whether on the farm or in the city, will do her part bravely. She finds employment for every moment of her time. From early dawn till dark and many hours of the evening she is found toiling for those she loves. It has been truthfully said that

"A man works from sun to sun,
But a woman's work is never done."

The farmer's wife (I know her best) must wash, iron, scrub, bake and churn at least once every week. Then she must cook three times a day, wash dishes three times a day, besides make beds, sweep and dust, prepare dinners and assist the children in getting ready for school and keep the faces clean of those who remain at home. Then there is the sewing, the mending; all of this and much more must be done every week and in every season of the year. During the summer months so much more is crowded upon us that we hardly know which way to turn. I speak now of those of us who do our own work with no hired assistance. There is the fruit to gather and prepare for present and future use, the corn to dry or can, the pickles to gather and put away, the poultry to raise and care for, the garden to oversee or work it herself, and, who knows where to stop when we begin to enumerate the many things there are to do, the "wife's share" of toil on the farm. So busy is she kept that there is little time left for rest or recreation.

But occasionally we see a wife, a mother who finds or takes time to assist in outdoor work. She goes out into the field and labors from morning till night, day after day, leaving the children to get along the best they can. Her own work is neglected all day which must be brought up after the day's work is done. She overtaxes her strength, becomes nervous and many times irritable, and her husband wonders why she is fading so fast, why she has lost that sweet disposition she possessed when first married, why her house is not kept so neatly as her neighbor's house. I believe the "wife's share" of the toil is found within four walls of her home. If she does that well, makes her home a pleasant, cheerful and attractive place for her family, a place which will not cause husband to scold or daughter to blush at the approach of company, she has no time left to labor in the field. There are many little chores, however, that she may do or assist in doing that may not injure her physically and at the same time may save the husband much embarrassment and she should realize that it is her duty to be a helpmeet and not a hindrance to her husband.

Too much can not be said of the responsibility which rests upon wife and mother. There is no calling so great for one of our sex as to occupy a position of this kind in the house. How her integrity reflects itself in husband and children. What an influence for right she has over her family when they can truthfully say "It must be so because mother said so."

Her example should be just what she wishes her children to be when grown to manhood or womanhood. For if by word or deed of mother the boys or girls go astray she must suffer her share of mortification in this world besides giving an account of it all before the judgment bar of God.

But there are some things she must not be expected to share alone. While she has or should have entire supervision over the household affairs, yet occasionally sorrow creeps into the home, such as none can realize save those who have had experience of this kind, when she needs a companion, a husband's sympathy and love, and unless that sympathy be found she perisheth, and when we look around us how few homes there are, indeed, that has not lost a dear one,' some almost without a moment's warning, others after an illness of months, as was the case in our own home. How sad we are, how we miss the ones departed, how we live the past over and over again. Lord pity that wife whose husband is destitute of the chords of sympathy, who must endure as her share the burden of sickness and death in her family, who must shed tears of despair alone. Husbands, wives, be partners in sorrow, partners in pleasures, partners in toil.

And now let us pass to the last thought, namely, "the financial part of the wife's share." The subject is suggestive of this thought first, but on surveying the ground for material with which to build my theme, I could but notice that the wife has a share in more than the finances. Time will not permit to dwell on her share socially, educationally, religiously, and observation teaches me that the wife of the rich man and the wife of the poor man, or one in medium circumstances, fare quite differently financially. The former may live in luxury, while the latter must live economically. The former may have servants to do her housework, while the latter must get along the best she can. The former may wear silks and jewels, while the latter must be content in common attire. Which class predominates in this audience today? Suffice to say that at any rate we are not all rich nor all poor, yet each one of us has or should have a part in the finances of our family, and as each one toils, just so in some way is each one to be compensated for the same, and we believe it is not enough that a woman receive as her share her board and clothing only. But that some means be provided by which she may also have an income that she may call her own and use at her own discretion. To be sure we may have all we can make from the butter and eggs, but by the time the grocery bill is paid what have we left for clothing for ourselves and children? Husband will pay for that, to be sure, and he should assist in keeping up the expenses of the family, but who wants to ask him for each article we need? Many families, we know, have but one pocketbook, and that belongs to each alike. But that way does not suit me. Perhaps I was employed too long before marriage in teaching the young ideas, having had a pocketbook of my own then, to be so dependent now.

Why not allow the wife to share on a small scale in some of the stock? Why not allow her a few sheep, if not more than two or three, from which she knows the profits will be hers? And the poor little motherless lambs that she tries to save from starvation, and if successful, does she not deserve them as hers? Then occasionally there is an unfortunate little pig that she works and worries with and teaches it to drink. If it lives, should she not have that for her own? In some families the children raise the pets, which is all right to get them interested, but the wife needs to be interested, also. If the children raise the pets, then let the husband sell his wife a pig or two or some sheep, and keep them for her, but don't give them to her, for she will appreciate her stock most if she buy it. Now she is in a position to calculate ahead as to her purchases just as her husband does with his investments. And if she be provided with plenty of cows and plenty of poultry she will be interested in her sales and marketing, and her life on the farm will not be so monotonous after all.

Indeed, I would not exchange my farm life for the best position in the world. How independent the farmer is, with plenty to eat, plenty of pure, fresh water to drink, and plenty to wear, if it is not of the finest material, plenty of fresh air to breathe and all the sunlight that can be found anywhere, and, best of all to us, an opportunity to raise our boy, the only child left us, free from the vices and temptations of city life. Then there are so many modern inventions to lessen and lighten our housework that we should not be denied. Many farmers think they can not do their work without a binder, mower, tedder, shredder and corn planter, corn plow and corn binder, etc. Then is there any reason why the wife should not have a good sewing machine, washer and wringer and a first-class cream separator? While the cost of these articles is insignificant when compared with machinery to be used on the farm, yet they are just as essential to the health and comfort of the family, and every wife should rightly demand her share of household conveniences, feeling confident that she rightfully and lawfully deserves them.

MAKING FARM HOMES ATTRACTIVE.

J. O. GARR, KOKOMO, IND.

[Read before Howard County Institute, January 25, 1902.]

There is a greater call now than ever before for men and women of brains and business ability to own and manage the farms of this country. The growing scarcity of good lands and the advance in the price of farm products has placed the productive farm at a high value, and more careful tillage and skillful management is required to make a farm investment profitable.

Heretofore the best talent of the farm has been drawn from to supply the profession, and the various branches of trade, and it now becomes necessary to consider the best means of keeping the bright boys and girls from leaving the old home.

The young people, on going to high school or college, are charmed by the activities of city life. They have access to homes of culture and refinement, and, looking back on the old farm life, it seems too dreary and monotonous. To obviate this we must change some of our farm methods, make farm life more attractive, and demonstrate to our children that all the brains necessary for the professions, all the shrewdness, tact, and business acumen of mercantile life can find abundant room for use in the management of the farm.

There is no better way to cultivate a love for home than to make it beautiful and attractive; and in this matter there is room for vast improvement in our country homes. It is no excuse to say one has not the means to apply to such work, for the humblest home can be made to look better by a little labor and tact; and the plainest cottage, with neat surroundings, often presents a charming picture to the passerby.

The ordinary farmer is, of necessity, his own architect and landscape gardener. His limited means are so sorely needed elsewhere, that he can devote but little for ornamental purposes, and yet, with his labor and natural resources, much can be done with that little.

Good judgment is required to select a suitable site for the home, and further, in determining the number, size and location of the necessary buildings. All this should be done with an eye to the general appearance after the work is completed. The dwelling should stand out prominently as the best thing on the farm. Outbuildings, orchards and feed lots can be so located as to not offend good taste, and yet serve every needful purpose.

A spacious dooryard or lawn affords opportunities for displaying good taste, and it is there that the best showing can be made at the least expense. The first impressions of a home and its inmates are made by the outside appearances. If, then, we would like to be counted as neat, industrious, or cultured, we must use care and good taste in the dooryard arrangement. Let the front lawn be in size proportioned to the size of the dwelling, but always ample. A few rods of ground given to this purpose is not lost or wasted. This plat should be carefully graded and seeded to grass. For a country lawn, nothing is better than our native bluegrass. A neat fence should enclose this precious spot; the best, if it can be afforded, but a well-built board fence, neatly whitewashed, shows up well and is not expensive. Don't be afraid or ashamed to use whitewash; it may offend aesthetic taste, but remember that we are mixing utility with our economy, and whitewash goes farther than paint, and helps the looks of the country place wonderfully.

Plant a variety of our native forest trees on the lawn. Don't plant too many, and don't make the mistake of planting fruit trees there. Fruit trees should be planted where they can be cultivated; besides, they make very poor lawn trees. While the trees are growing, and whenever there is not too much shade, shrubs, vines and flowers can well find a place. There are many varieties that are inexpensive, easy to get, and require but little attention. These can be arranged so as to add much to the beauty of the grounds. A few rustic seats, flower stands and vine trellises are easily made, and cost but a trifle, while their returns in pleasure are inestimable. Provide a good lawn mower, and keep it in good condition. It is no trouble to get some one to use a good mower, and its timely use brings good results. Lastly, keep all things in good condition, ready for inspection at any time.

And now the farmer asks, Who is to do all this, and where can one find time to do it? Let each member of the family have an interest in it. The men and boys the heaviest work, while mother and the girls will promote health and strength by the outdoor exercise. Let the desire be formed, and time will be found sufficient for the required labor. Will it pay? Yes, a thousand times over, in happy hours, home pride, contentment, a love for order and neatness, and the consciousness of having helped to make God's earth more beautiful.

EDUCATION OF THE FARMERS' CHILDREN.

MISS LUCY ROBERTS, OSGOOD.

[Read before the Farmers' Institute at Osgood.]

If you were asked what is the most important thing on the farm, that which you prized most highly, what would be your answer? Would it be your horses, cattle, or farm implements? No, I am sure it would not. It would be your wives and children. For is it not the aim of all your labors to make their lives happier? You are striving to amass wealth for your own, and their comfort, to make their lives fuller and richer than yours has been. But suppose you were able when he became of age to give each child a large sum of money or one of your valuable farms; would you then consider him fully equipped for the struggle of life?

Soldiers when sent forth to battle may be provided with horses and fine uniforms, but unless they are provided with something with which to fight -some implements of warfare—they will fall in the battle, as will the boy or girl who enters the conquest of life with only money or farm. We believe the surest implements of warfare he can have, that he must have if he makes a success in life, is an education.

You can not give it to him as you would a farm, but you can help him to get it for himself. It is one of the things of life that can not be given, but must be acquired, and when once acquired it is his own for life. Ruskin says, "Education is the leading of human souls to what is best in life, and making what is best out of them." We are sure the farmers wish to lead their boys and girls to what is best in life and to make what is best out of them.

Everything in this life is built on a foundation, and it is the foundation that must stand the test. We consider a common school education the foundation of all educational structures. This is the first essential; no difference if on this foundation is to be the university, the college or just the common country school house. At least he must have a firm common school education upon which to build all his intellectual learnings. You are helping him to build this foundation every day you send him to the district school. Every dollar you spend on books and school supplies is helping him to lay another stone on his educational foundation. On the other hand every day you keep him out of school you are depriving him of one of his foundational stones of knowledge.

In my experience as teacher my deepest sympathies were always aroused when a boy entered school about six months after the term had commenced, after all the fall work had been done on the farm. No wonder the boy was discouraged; no wonder he was usually the bad boy of the school. We would have been had we been in his place. Of course, sometimes this may be unavoidable, but if at all possible, this boy should have an equal opportunity with the other boys and girls of his age. There is only one time to lay this foundation, and that is in his youth. If he does not acquire a good common school education while young he will have nothing on which to build, and his intellectual structure will be a failure.

When the foundation is complete, when a general education has been acquired, which must be similar both in city and country, it is then we notice the difference in the buildings to be erected. Some wish to build a doctor's office, some a store, some a factory, some a lawyer's office, some a parsonage. In other words, each must choose a profession, and must build according to the profession he has chosen. Here is where I think the farmer makes one of his most serious mistakes, the lack of training in his profession.

Suppose a man had four sons, and when each became of age he would tell them to choose a profession, and he would give them the means to start in business. One says, "I have decided to be a doctor." The father says, "All right, I will build you a doctor's office, give you a medicine case and surgical instruments and tomorrow you may be a doctor." The next says, "I will be a lawyer." The father says he will provide him with an office and a shelf of law books and he may enter his profession on tomorrow. The third says he has chosen civil engineering as his profession. The father says, "I wil provide you with transit, chain and compasses, or surveyor's outfit, and tomorrow you may go to work." We would say, "How ridiculous! Does he expect those boys to do anything without professional training?" But when the fourth boy says he will be a farmer, we think he is perfectly right to say to him, "Here is a farm; be a farmer."

Now why do we expect more of this boy than the others? While we believe the farmer boy to be equal with any, I believe we credit him with too much natural born ability. I believe it is just as essential for the farmer boy to receive professional training as in any other profession of life.

I am glad we have our State Agricultural Colleges where our boys and girls can receive practical training to make more successful farmers and farmer's wives. I wish it were within reach of all country boys who choose farming as their profession to take a course at Purdue or some agricultural college. I am sure he would be a more successful farmer for the information and practical training he had received.

While all can not attend these colleges, much information may be obtained by reading and books. We may learn by the experiments of others. Carlyle, the poet, says "The true university of these days is a collection of good books."

We are glad the days are passed when the almanac and the newspaper formed the chief literature of the farmer's library. We are glad that now when we enter the home of a thrifty, industrious farmer we find on the table the leading papers and magazines of the day, and the standard works of all times. Give the children plenty of good books, books worth reading and re-reading that you will not be afraid for them to use.

When you wish to buy a new plow or cultivator do you examine it to see if it is artistically built, if the paint is the proper shade, then buy it for its beauty and stow it away in the barn to show your neighbors on special occasions? No, it is for the strength and durability that you choose it, and the amount of work you will be able to get out of it. No more should you purchase pretty, morocco-bound, gilt-edge books and lay them on the parlor table for your neighbors to admire when they call, but buy them like the farm implements, for their strength and lasting qualities and the good you and your children will be able to get out of them. Not like the man who said he had a bible given to him ten years ago as a Christmas present and had it as good as new yet. What would you think of a farmer who bought a plow ten years ago and had it as good as new yet?

Our government has done much within the last few years to further agricultural instruction, and it has decided to make the study of the soil and farming one of the most important features in the system of public education in Cuba and Porto Rico, as the inhabitants will have to depend upon farming as their chief industry for many years to come. Therefore it was decided that training in agriculture would be most beneficial to them and it will be taught in connection with the common school branches.

France has a remarkably complete system of agricultural education. It reaches all the people. It begins in the rural primary schools where the simplest facts of agriculture are taught, there being at least 3,500 of these country schools, with gardens attached, where the children may receive practical training in farming or agriculture the same as in any other study. The teachers have to take a normal course and pass in the teaching of agriculture as in other branches. While I do not know if this would be practical in our country, I do believe more attention should be given to the study of agriculture in our common schools.

While country children have many advantages over the city children in being every day brought into contact with nature—the trees, the flowers, the birds, the springs, the hills, the bright sunshine and pure water, and can learn many things by observation that the city child can not. At the same time we believe the farmers' children will have to climb more hills, pass over rougher roads and through more storms by the way of the country school house to secure his education, but will not half the victory be in the struggle one has to encounter? And will he not be the stronger, and will not "excelsior" seem printed in larger and more glowing letters when he has reached the summit, for the hardships he has had to endure to achieve his success? We believe the farmer boy has the strength and the will, and armed with a good education, can not fail to come off victorious in the battles of life.

THE IDEAL HOME.

MISS SALLIE BARNETT, CATO, IND.

[Read before Pike County Farmers' Institute.]

Let me paint a picture of the ideal home, and you view the painting with me.

Now shall I arrange the canvas and paint, in many beautiful colors and delicate tints, a scene of splendor, or shall it have a more humble appearance? With the mind's eye no doubt we see, on first thought, a stately and artistic residence. It may be situated in the midst of the busy city, where it is surrounded by many other beautiful homes very similar to its own structure, and where it has the advantage of city improvements and all the modern inventions. Or it may be in the country, where it is surrounded by beautiful flowers and gardens, where the green trees wave their lofty boughs, and many little birds warble forth their songs of gladness in the fresh country air.

Let the situation of this beautiful home be what it may, we have the painting before us, and we are not to view it through rose-colored glasses, for there is another side to all this splendor. There is always a dark and light side to all things.

We have noted the beauty of the exterior of this home, now let us enter and see if the interior corresponds with the view which we have taken of the exterior. We find them very much alike according to structure, and considering the structure alone, we have doubtless painted an ideal home.

But if there is nothing more to be found than this, we realize that our efforts are vain, and that we have made a hopeless failure in the painting.

In order to paint an ideal we must give room for many things which have a tendency to make a home happy, such as music, literature, congeniality between the inmates of this home, and a mutual interest in all things as far as is possible. There must be an atmosphere of intelligence, we must give room for the library, the journals, and the dailies. There must also be social connections with the outside world, and an interest in things both spiritual and temporal. One thing which is of great importance is a spirit of congeniality between the old and the younger members of the family. The parents should not continually discuss business affairs while the children entertain each other with accounts of the doings of their young friends, their sports, and the many things which they do for entertainment. There should be more of a mutual interest in all these things, and by exhibiting this interest you give rise to those round-table discussions which will break the monotony of the long winter evenings and may have a tendency to keep the children by father's fireside instead of going elsewhere for entertainment.

But with all this, is this home ideal? If we can find a spirit of peace and love ruling over all, then we may consider that our picture is perfect, but without this it is incomplete. It matters not how near perfect the home may be, if there is not a mutual love existing between the inmates of this home, it is impossible for them to be happy.

We might paint the picture of another home which is simply a little hovel, and in which from appearance there could be nothing but misery; but if there is an overruling love reigning supreme here, then we find there is sunshine, and the inmates are much happier than those in the grandest mansion where there is discontent.

Whether the home be palace or hovel there are always some who are happy and some who have burdens to carry; perhaps it is a secret sorrow of which the world knows not that must be borne in silence and alone.

Let this be as it may, if we find the spirit of love, there will we also find the spirit of contentment. Although we all strive for wealth and education, which is something we should all attain, and attain as much of it as we can with honesty, yet we must have that one essential quality—a pure and holy love.

I endorse the words of him who wrote:

"What is a home without sunshine
As it sheds its bright rays far above,
You may have wealth and its pleasures,
But what is a home without love?"

WHY LIVE ON THE FARM?

MRS. OLIVER FERGUSON, MILTON.

[Read before the Farmers' Institute at Cambridge City.]

Having its origin in necessity, agriculture has always been the most prominent in the growth and development of mankind.

It is the duty of the young to bear in mind that nothing is more respectable or dignified than the life of the independent farmer. Then, you say, "Why do not more farmers' sons become farmers?" The answer may be found by studying their environments. Does the farmer tell his boys that his occupation is the most independent in the world, or does he say that farming does not pay? Does he send his children through the rural school and finally to some higher school of learning, and say to them, learn because knowledge will be useful to you in making your life on the farm happier and your work on the farm more successful? Or does he not often say, "Go to school and get an education, so you may grow up and become an editor, or a doctor, or a lawyer, or a school teacher, or a preacher, and then you will not hate to work so hard." In speaking of their own children or of other children who have had the good fortune to acquire a good education, I have frequently heard farmers say it is to be hoped that they will make some good use of their schooling, or it is not necessary for them to remain in school longer, if they intend to be farmers. Just as though knowledge could not be made use of on the farm. A lady was a successful teacher in one of the high schools of this State. She gave up her position, married a farmer and is now living happily upon a large farm. Some lamented that a woman who had received a finished education should throw herself away by living upon a farm. But she is proud of her husband's calling, and says, "Let us show our children the bright side of farm life, by seeing it ourselves, remembering that in teaching them to love the country, there is taught the love of country—the very essence of patriotism."

Farming is a great educator. It develops forethought and self-sufficiency. Continued employment in the service of others, in many instances, tends to cripple native capacity. Men and women do not reach their highest development under restraint. There must be freedom before one's life blossoms out into its greatest power and beauty. Freedom of action, freedom of thought, freedom of expression are essential to the largest growth. This freedom is easiest found in farm life.

But then you say too much work on the farm. Yes, if it becomes drudgery. Let us make haste to learn that the reward of work is power—power to do more work. Work is not only an opportunity to make a living, but is also an opportunity to make a life. While man is acting on the world through work, work is perpetually reacting on man. A boy learning to saw a straight line is also learning to tell the truth. While discovering the beauties and equities of a symmetrical leaf, he is uncovering in his soul the principles of justice. There is no one in a better position to become an observer of nature than the farmer. In Shakespeare's words, "He may find sermons in stones, books in running brooks and good in everything." Although a knowledge of books is valuable, he does not need a book to study science. Experience teaches the farmer more than the school can teach about insects of all kinds—especially about bugs—potato bugs, chinch bugs, little bugs, big bugs, and humbugs as well. In going about the business of the farm its owner may form the habit of observation, endeavoring thereby to learn some new thing about the secrets of nature, something that may please his fancy and give him food for entertaining thought. Some one said:

"The building swallow and the skillful bee
Taught ancient men their gifts of masonry."

Markham says of the poet—might say of the farmer:

> "He knows the gospel of the trees,
> The whispered message of the seas;
> Finds in some beetle in the road
> A power to lift the human load;
> Sees in some dried leaf, dried and curled,
> The deeper meaning of the world;
> Hears through the roar of mortal things
> God's immortal whisperings."

For years the complaint has been that the boys were leaving the farm, and now it seems in some localities, there is no one to take the boy's place. One of our country papers recently stated that farmers were fearful that they could not secure needed help for the coming season. In a few days the postmaster of that place received more than a hundred letters from men over the country, who had heard that farmers in that section were in need of help. Some of these letters were from Texas, others from Maryland, Dakota, and South Carolina. Most of the writers said they lived in cities and wanted to get back to farm life, which they left to take employment in city shops. The Indiana Farmer says the act of Congress, 1862, in the dedication of public lands and the establishment of agricultural colleges, and subsequently of experiment stations in connection therewith, did not come one minute too soon. These colleges and stations have shown the boys that the elements of scientific culture are found in agriculture, and there is enough in it to command their best thought, and fill their brightest promises in life, as well as to awaken a love and taste for nature they had not before known.

They see that farming is a science in all its branches. It may be true that these colleges and stations are rapidly solving the problem of the movements from the farms to the city. The total number of farms in this country has increased more than 20 per cent. in ten years. Smaller farms and probably better cultivation. This increase in the number of farms, by the way, is most noticeable in the far west. Many of the boys and girls in the west are going from the farm to the college and from the college back to the farm, bringing with them new vim, new interest, and new knowledge to be applied to the pursuit of farming. Tenant farms have increased about 40 per cent. in the east where the displeased owners have rented their lands, and have gone to town to live. In this part of the country we are glad to say that much of the best blood remains upon the farms, and our farmers are progressive.

The possibilities of the trolley roads in this part of the country are only partly appreciated, but I believe best appreciated by our farmers. They say, yes, give us the trolley roads, we will move our fences and get out of the way. These roads will not be confined to the carrying of passengers, but can be made of still greater service to the rural districts by carrying freight and express. They can do this quickly and cheaply. They can take produce direct from the farms and deliver goods there too. The trolley lines will be to the rural districts what the railroad is to the city and even more.

Reports of officials concerning the growth of rural free mail delivery, are most encouraging to the farmer. This method of distributing mail in the country started five or six years ago with an appropriation of $10,000. The first route ran out of Charleston, W. Va. Rural delivery at once became popular. On the first day of last November, 6,000 routes were in operation, with one carrier to each. Since these routes were established, the amount of matter collected and distributed has materially increased. The carriers not only deliver the farmers' letters and papers each morning, but are also provided with stamps, issue money orders, and register letters. These routes are to be inspected every six months, and close watch is kept on the service of the carriers. Delinquent carriers are looked after and if a farmer has any complaint of his service, he has only to report to headquarters at Indianapolis, and the matter will be investigated.

What more can the farmer ask?

In making up their routes especial attention has been given to good roads. If they are too bad the service may be discontinued temporarily, at least, and this it is hoped will prove a sufficient incentive to the farmers in seeing that the roads are kept in good repair at all seasons of the year.

The State Board of Commerce held its annual meeting at Indianapolis in February, and among other topics discussed there was that of good roads. Especial emphasis was laid upon their value to the farmer. Good roads add much to the enjoyment of country life. One speaker said the farmers have the situation in their own hands. They can influence legislation that will give them ample road facilities for marketing their grain, and all the products of their farms at all seasons of the year.

At the meeting of the State Board of Commerce a committee was appointed to take up the road laws of the various states to see if what was good in them is applicable to Indiana, and put the matter in shape for action by the legislature. Our rural public schools, although not perfect in all respects, are capable of giving the children who attend them regularly, an excellent education. Children have many advantages now that have not always existed. The graded district school of today, with its present course of study, together with the township high school, offer advantages unknown to many older people. I regret to see comparatively so few of our country boys and girls going through these township high schools.

Perhaps the greatest weaknesses in our country schools are those which can be remedied by parents themselves. They are, irregular attendance and the lack of punctuality. See that your child is in school every day and on time with proper books, and the schools will do the rest.

A teacher in a good position to know says, "Add to the rural school the punctuality and the regular attendance of the city school, and at fifteen years of age, the average boy or girl of the rural school, with a six months' term will have accomplished as much as the city cousin will have accomplished at fifteen years of age in the city schools having a nine months' term." I have seen numbers of boys and girls who have tramped for a mile or half a mile at least, through mud and snow on country roads to a district school. I have seen them enter the town schools, and, in clearness of thought and strength of mind, stand side by side, and even stand ahead of bright town boys and girls of the same age, who have never walked more than five squares to school in their lives. Understand us, we are casting no reflection upon our town and city schools, nor upon the patrons, pupils or teachers of said schools. They are all to a great extent victims of environments which they are striving manfully to counteract, and teachers of city schools work harder than the district teacher does to accomplish the same results.

School is the recreation of the country child, therefore, he is fully interested in it and loves it. Often to the town child, school is a drag because of the many other things which claim a share of his thoughts. The industrial life of the farm proves a good discipline, which cultivates wholesome habits, such as application to work and will power to accomplish whatever is undertaken. In the large cities it has been found helpful to the schools to introduce in them industrial work to educate the hand—manual training for boys; cooking for girls. The chores and other work on the farm are productive of better results than those obtained from manual training or cooking schools. David Starr Jordon said, "I value no part of my own education more than what I learned on the farm. Not that I want to do any of those things now, but that the habit of meeting things squarely and doing them was a vital part of my education." If a good man or woman was born and raised in the country, the biographer points with pride to the fact that he or she was raised on a farm. Dewey, Sampson, Lincoln, Grant, Garfield, Greeley, Tilden, Hayes, Whittier, Howells, Mary Lyons and thousands of others in all ages of the world, have risen to eminence and have possessed those sterling qualities that in some form or other have made the world better and themselves heroes of men. Was not, then, farm life their school of severe discipline? At a recent meeting of the business men in Chicago, they recommended young people taught in the district schools for clerks or assistants, stating that they found them to be accurate and practical. This is quite a compliment, both to country youth and to their teachers. There is no place better than the farm to cultivate in children a love for good reading. Probably the best way to do this is to have them build up libraries of their own. Begin the work when they are quite young, as soon as they are able to read a book through, as they call it.

The ownership of a book is a great thing to a child, and no child appreciates a good book more than the boy and girl upon a farm, especially when the book is purchased with money earned by doing chores, or that obtained from the sale of a pet pig or a pet lamb. If rightly guided reading may become one of their main springs of entertainment on the farm. Many farmers wives are acting upon this plan. I know one whose children are small, but they love to read and have about twenty-five books which they call theirs. The mother guided these children in the selection of books. This woman was educated in the district schools, but left them with a taste for good literature. When her children were small she completed the four years' Chautauqua course, took the examination of the same and received her diploma. Her library consists of 275 volumes and is still growing.

In closing I will quote from one who was familiar with the turmoils of the city as well as the quiet of the country home.

The late Governor Mount said: "There are many things essential to a useful and successful life. Prominently among these is early training to habits of industry, frugality, economy and temperance. Coupled with these, and of no less importance are environments that develop independence of thought and action, self-reliance, courage, originality, will power and a strong body. It has been said that the man without self-confidence and an iron will is the plaything of chance, the puppet of his environments, the slave of circumstances. With these he is king, ever master of the situation. The country offers the best opportunities for this needful training. A word to country boys: Don't grow weary with your lot, a change to the gaity of the city will be worse for you. Patient toil is the road to success. Be industrious, be economical, be hopeful, aim high, don't chew or smoke or drink intoxicants. Stand for nobility of character and you will win honor and success.

"A student of nature working in harmony with the god of nature. The farmer's life is the sweetest, the farthest removed from the turmoils of strife and the nearest to God of any vocation. I rejoice in the anticipation of the restful quiet of my country home, when I shall be permitted to lay aside public duties, cares and responsibilities, and return to the home which represents long years of toil and hopeful struggle."

OPPORTUNITIES OF FARM LIFE.

RUTH CURTIS, AURORA.

[Read before the Dearborn County Farmers' Institute.]

It is an old saying, "God made the country, man made the town," and in that grand old book, which is truly the farmer's book, we learn that after the fall the first vocation instituted was that of agriculture. Nowhere can we receive more or better training than on the farm.

The learned men of all ages, philosophers, statesmen, bankers, and orators, from Cicero to Lincoln, have had their earliest training on a farm.

The nations that neglect the tillage of their soil are invariably nations of poverty, a people of debased morals, of endless contention and murder. For example, look at the Spain of to-day, at Russia and Brazil. Since this is the case, the greatest nation of to-day (which is our own) surely needs to encourage this branch of her industries, and we as farmers should be proud of the trust imposed upon us.

Of all earth's noblemen none possess greater independence or greater opportunities than the farmer. There are none that bear so much responsibility for the world's enlightenment.

What an opportunity, then, is afforded the young people of to-day, not only the hope of entering one of the many professions, but to become one of the most important factors of our country—a progressive farmer.

Who can not picture an ideal farm home? That is surely the place of all others where one can enjoy life to the utmost. Nowhere is there such a share of pure, healthful pleasure as in the country house. There is the coasting, the horseback-riding and cycling, the picnics, the tramps to the woods after nuts or wild flowers. All these and many more are the birthright of the country boys and girls. Then with an abundance of good reading, the daily newspaper, the telephone, who can enjoy life any more than the young folks on the farm.

To-day there is a far-sounding call in all professions for prepared men and women, and surely the farm needs its share of culture and intelligence. The America of to-morrow is the growth of the America of to-day. As the young people are leaving their homes for the city, more and more will they appreciate the pure enjoyment of rural pleasures, more and more will they see that all the artists of our largest cities can not produce such a beautiful panorama of ever-changing scenes as Nature has limned for her admirers; for what human artist could portray anything so beautiful as the flaming splendor of the autumn woods, or the delicate beauty of the trees and flowers, as after a spring shower there comes a sudden burst of sunshine and the trill of caroling birds.

What poet in the midst of a crowded city existence has not pined for his native haunts, and out of the longing of his heart has not written words to quicken our appreciation and love for all that is beautiful?

It is not strange that the intelligent farmer boys and girls of to-day are wanted in all professions, and it is an undisputed fact that unless there is a corresponding movement to the farm, the best material of our country will have settled in the cities.

Is it fair that the farm should train her young people for a life of solid worth and usefulness, but to see them spending their talents in the city? Must we leave the farm for an uncertain career in the crowded city? Is it not better to be an expert housekeeper and cook than a stenographer or bookkeeper, or a good tiller of the soil than a halfway merchant or politician?

It is agriculture in a highly improved state that is the means next to righteousness which truly exalts a nation, and that will contribute to its enduring prosperity.

And how swiftly the opportunities for improved agriculture are crowding themselves upon us. How little the farmer a few years ago thought the daily mail, telephone, and in some places the electric cars would come to them. Thus a few years hence improvements which we do not dream of will make farm life still more delightful. As we think of the greater things to come, we are reminded of Tennyson's famous words:

"For I looked into the future far as human eye could see,
Saw the vision of the world, and all the wonder that will be."

Nearer and nearer is farm life approaching the ideal; greater and greater are its opportunities for enjoyment and usefulness, and of life on the farm it can now truly be said:

"Life greatens in these later years,
The century's aloe flowers today."

IS RURAL LIFE THE MOST SUITABLE FOR THE DEVELOPMENT OF YOUTH.

SHIRLEY E. ENGLAND.

[Read before Perry County Farmers' Institute.]

If it had been possible for us to look upon the boyish face of a Washington, a Garfield, or a Lincoln, would we have been able to see then, in those actions and fresh young faces portrayed the doings which in after years marked either as a leader amongst his fellows? Ah no; for, of course, there is no trace of such development to be seen in the young. Yet one does not need to be a careful observer to readily see in those features a look of intelligence, and in the eyes, that glitter of determination, which plainly show that the raw material is stored within that baby boy's thin unimportant little self, to develop when the proper influences of life have come to have their effect, into the bright and useful man which the world now sees.

But suppose we now consider what wrought this wonderful change in the life before us. What taught him? How was he led? To what conditions was he subjected? What transformed him from, we might say, a youngster of practically no use into this useful specimen of manhood that we look with sincere admiration upon? Now as the result of our investigation to know what great influences affected this young life and brought about such remarkable development we will find that the greatest, if, in fact, not the only one, may be expressed by the single word, environment. And yet, to reach the just stated conclusion it is not at all necessary for me to throw aside such readily apparent and time-proven sayings as, "A man must be born to rule ere he can be a ruler," that is, before he can do a thing he must have some natural capabilities to do. Although this be so, on the other hand appears the plainly and too often illustrated case of one who was born with the powers to do yet never became a doer from the fact that the above-mentioned essential, "proper environment," was not the condition under which the capable but unfortunate lad had been reared. "Such are the flowers that are born to blush unseen, and waste their sweetness on some desert air."

Now, the truth and importance of the facts set forth in the preceding statements, are well appreciated and heeded by most all conscientious parents in the rearing of their children. But the question on which depends the successful completion of their task to the desired end is found in this: What makes up a suitable environment—one that will thoroughly develop in the youngster those essential qualities to make of him a successful and useful man? Where can such a set of conditions be found? This is the great question, where? The answer which will give most universal satisfaction may be found in this: Place the young life amongst the conditions to be found in a rural home.

Why, we know that even in the beginning, when God made the heavens and the earth, and placed thereon the being in the likeness of himself, that he prepared for him a home in a wild natural garden, where grew beautiful plants and flowers with the beasts of the land playing amongst them. In short, the abode of man on earth as prepared for him by God, as the best place to cultivate and develop his powers, was amid a perfect paradise of nature and her doings.

What God saw best for man will certainly exist, in a sense, forever the same. The only difference is that perhaps if the same occurrence should take place to-day we might use a more modernized term of the same significance and say, instead of Paradise, that Adam was given a perfect "country home," in which surroundings he would naturally so live as to give the long line of following generations a healthy body and an active mind. And the just named fact has remained the same from the very beginning until to-day: that the true and practical principles of life are more easily, readily and surely acquired by association with conditions in their natural state, unaltered in their workings by the hand of man.

Let us now examine the records of time for examples of ideal manhood; to find where they were brought to a period of maturity and acquired the essential qualities of energy and determination. We will notice that in most cases these attributes were a part of the stern and unassuming life about their boyhood's country home.

It is here he comes to know by the performance of daily duties the value of time in the accomplishment of each task set before him; that more vim and energy bring quicker and more complete success; that, if at first he fail, to determinedly try again and again until failure is no more. All such important lessons, so difficult to acquire, are here impressed upon the mind day after day, as the absolutely necessary and rigid routine of work is finished by each nightfall. His mind as a whole must develop to grasp and be in harmony with the broadness of the life about him. In fact I believe the principal difference between the mind of the rural and the city-bred youth may be expressed in this, that the former has a kind of "practical broadness" in his view of the facts and conditions which govern human progress. Can not the greater part of you call to mind an example of some individual, who, although he has graduated in his profession and holds the certificate of proficiency, yet is unable to carry on his business successfully—is not a success? Yes, of course you can, for such examples are common. When some one, surprised at this unlooked for failure, asks why, is not our answer generally something like this: "Oh yes, he does seem to know enough, but somehow can't put it to use; he doesn't seem to understand the common ways of the world; he don't take well?" Ah yes! that is it. The surroundings and associations of his youth have not given him a broad mind. His training has been onesided.

Now, where was the early home of that young man you have in mind? Was he one of those country laddies, who used to make the fire and feed the farm stock before going to school, and must haul wood or shell corn for mill on Saturday? No, not often, because this fellow understands how to use what he knows and will spare no pains to do so; this kind of young man knew just about what he was going to do with his knowledge, even before the course to acquire it had begun.

I remember of a conversation with a young man, a resident in one of the large cities. He talked of the various colleges there, in which he was then taking different courses of instruction; it was after discoursing at some length upon the various advantages of each, and the grand opportunities he had at his command to make himself great that he brought over a remark in a half pitying way, something like this;

"You don't have any chances like these down there in the country where you live, do you?" This young man in time completed with honor both his scientific and professional course, and yet to-day, although strictly moral and self-respecting, he is, with all his training, a business failure.

Why is this? Because his associations have fostered that proud dignity of spirit, until he will not, in fact, does not know how to mingle with and be a part of everyday business life. Ah! what a different showing there would be if that young man had only been fortunate enough to acquire the understanding which that place he seemed to think offered such poor advantages could have so thoroughly taught him.

Individuals of this kind are to be met with on every hand. Men who have had what is seemingly a golden opportunity in life, yet amount to very little. But it is as easy to recall fully as many examples as are directly the opposite to this, of now worthy men, much of whose youth was spent in labor, with no educational advantages, unless, perhaps, they might get to attend part of the country school in winter.

But in those seeming disadvantages were found the conditions to which might properly be attributed the basis of his later attainments; for he was, by their influence made ready; fitted to make good use of the opportunities found in the city when in time he should be in a position to take advantage of them.

The one thing to which may be attributed the failure of so many otherwise capable men, is that they do not have a broad conception of the basic principles and forces which govern practical life; hence have no solid foundations upon which to base their work. Here let me say again I believe there is no better place on earth for a boy to build this foundation for future success and for the development of himself, mentally, morally and physically, than on the farm.

If the boy does not wish to become a farmer, let him only learn habits of industry, "to do whatsoever his hand findeth to do" well, and inform his mind; all other things will come later, when he has chosen his profession, where he can easily outdistance his city cousin in the life race.

Rural scenes possess a charm for everyone; not alone for the farmer. They have been the inspiration of artist and poet. From the fields of wheat Millet drew the inspiration to paint the "Song of the Lark" and "The Gleaners." Rosa Bonheur loved to paint the farmyard animals. Landseer, the famous landscape painter, received his greatest inspiration while roaming over the heather-fields of Scotland.

And how much would Bryant, Wordsworth, and Goldsmith lose should we erase all they have written on nature.

Best of all rural scenes are the farmyard homes, where, contented round the log heap fire, the farmer and his children sit.

> "Here, 'mid circling fields of wheat and corn,
> A nation's strength is born."

FARM ADVANTAGES.

MRS. L. F. CRONKHITE, HEDRICK, IND.

[Read before the Farmers' Institute, West Lebanon.]

"Advantage," what is it? Webster defines it as "favorable circumstances." What more favorable circumstances could there be than living on a farm with all the surroundings that a modern farmer has at the present time? A large residence with all the modern improvements, fine outbuildings, barns and granaries of mammoth size that shelter all his stock, and in which he can preserve all he produces on his farm; beautiful groves surrounding these buildings, a nice vegetable garden from which the vegetables come nice and fresh for the table, a well kept lawn with hammocks hung here and there, flowers of all kinds in every conceivable droves of sheep and swine and nice flocks of pure-bred cattle, large droves of sheep and swine and nice flocks of pure-bred poultry. These and many others constitute the advantages of farm life. What more higher calling is there than the farmer has?

Agriculture is the greatest among the arts, for it is first in supplying our necessities. It is the mother and nurse of all other arts. It creates and maintains manufactures; gives employment to navigation and materials to commerce. It animates every species of industry and opens to nations the surest channels of opulence. It is also the strongest bond of well-regulated society, the basis of internal peace, the natural associate of good morals.

We ought to count among the advantages of agriculture the charm which the practice of it communicates to a country life. That charm which has made the country the retreat of the hero, the asylum of the sage and the temple of the historic muse.

The sweet occupations of culture, with her varied products and attendant enjoyment, are, at least, a relief from the stifling atmosphere of the city. We deplore the dispositions of young men to get away from their farm homes to our large cities where they are subject to difficulties and temptations which but too often they fail to overcome.

We have among our present advantages many that our forefathers never dreamed of. While they would put in days harvesting their grain with a sickle and have eight or ten men for their wives to cook for, we can, with our improved binders, harvest ours in one-third the time and have only two or three to help. And while it would take them one day to thresh out fifteen or twenty bushels of grain by tramping it out with horses, we can, with our modern threshing machines, thresh out three thousand bushels per day. The American of the Revolutionary period was an extremely poor farmer. Looking back upon his methods and on his work it is hard to say which were the more crude, his implements or ideas.

He used a wooden plow—he was afraid an iron one would poison the soil. He had not yet learned that glanders were contagious and would work and stable healthy stock alongside of stock affected by it, and wonder what was in the soil, air or climate that carried them off.

He didn't understand the use of fertilizers, and instead of spreading the barnyard gleanings on his fields he let it accumulate around the barn until the approaches were impassable. Then he dug the barn out and moved it. Instead of rotating crops to save the soil, he planted according to the phases of the moon. In Virginia the belief prevailed that it would kill cows to house and milk them in winter. It is quite different at the present time as we would think it an impossibility to milk cows without housing them in winter.

Among our advantages we also have the gang plow with which our farmers can turn over more ground in one day than our forefathers could in three or four. And the hay loader which saves the expense and spoils all the fun of hauling the shocks up with horses. Also the free gravel roads, the rubber-tired buggy, the automobile, the patent washing machine, the gasoline stove and steel range for the wife, and last, but not least, the telephone which is one of the greatest advantages to the farmer that has ever been invented. The farmer uses them to find out the daily market, sell his stock and produce, gather in his help for threshing, etc. His wife uses them to exchange ideas with her neighbors about her work, find out where her neighbor is going to spend the day, what is the latest fashion, and—O, well, just a little of everything.

CAN A COLLEGE GRADUATE UTILIZE HIS EDUCATION ON THE FARM?

ALBERT RUSH, COLUMBIA CITY.

[**Read before the Whitley County Farmers' Institute.**]

We will ask what is the aim or purpose of an education? and by answering this will imply the other.

The doing of anything presupposes some knowledge, for every action is the employment of certain agencies which stand in the relation of means to our practical end, or object of desire; and we could not select and make use of these means unless we knew beforehand that they were fitted to bring about the fulfillment of our desire.

Thus, after sitting reading for some time, and becoming cold, I go out and take a brisk walk, because I know that by so doing I am certain to recover warmth. It is still more manifest in the case of complex actions. The action of an engineer, of a surgeon, or of a statesman, involves a quantity of knowledge of various kinds.

The knowledge which is thus serviceable for doing things or for practice is of two sorts. The first kind of knowledge, being derived from what may be called unrevised experiences and observations is called empirical. The second kind being the outcome of those processes or revisions and extensions of everyday empirical knowledge which makes up the work of science is named scientific.

We call any department of practice an art, when the actions involved are of sufficient complexity and difficulty to demand special study, and to offer scope for individual skill. Thus we talk of an art of cooking, because with our advanced civilization the preparation of food has become so elaborate a process as to call forth special preparation or training. Every art requires a certain amount and variety of knowledge. In the earlier stages of development the various arts were carried on by help of empirical knowledge. Thus, in agriculture, men sowed certain crops rather than others in given soil because they and their predecessors had found out from experience that these were the best fitted.

Similarly, in medicine, men resorted at first to particular remedies in particular diseases, because their practical experience had taught them the utility of so doing. As an art, education aims at the realization of a particular end. This end must of course be assumed to be clearly defined before we can repair to science to ascertain what agencies we can best employ in order to compare it. At first sight, however, it might seem that this condition is not satisfied. Writers have discussed at length what the true end of education is, and they have proposed very different definitions of the matter. The reason of this uncertainty is apparent.

Education, unlike such an art as cooking, has a large and comprehensive object, namely, to help to mold and fashion in certain definite ways no less complex a thing than a human being, with his various physical, intellectual and moral capabilities, so as to fit him to fulfill his highest function and destiny, and to ascertain what the rightly fashioned man is like, and wherein consists his true work and service is a problem of much difficulty. In truth, we can only satisfactorily settle this when we have determined the supreme end of human action—in other words, the highest good of man.

It is the province of the great practical science of ethics to ascertain this for us; and the teachers of this science have from ancient times been divided into opposed schools. We need not, however, wait for the resolution of this grave and difficult problem. Men are, to a large extent, practically agreed as to what is right and wrong, though they have not settled the theoretical basis of this distinction. In like manner, educators are practically as one as to the objects they aim at. In spite of ethical and theological differences we agree to say that education seeks, by social stimulus, guidance and control, to develop the natural powers of the child so as to render him able and disposed to lead a healthy, happy and morally worthy life.

An oft-repeated maxim of the better sort reads thus: "On earth there is nothing great but man. In man there is nothing great but mind." Although we may object to the absolute manner in which this statement is made, there is embodied within it a truth of the higher order. Mineral, plant, animal, man, mark four giant strides in the march of creation. Between the lily of the valley and the clods at our feet, our of which it grows, what an infinite distance. For through this tiny plant the dust of the earth is transformed into something of beauty, fragrance and life; and between an organism like that of the lily, that simply turns dead matter into life, and an organism that sees and feels and moves, there is that difference which separates matter from spirit. Animal is as far removed from plant as plant is from mineral. But towering above the mere animal as the Alps tower above the petty mounds at her side is the nobler creation which not only sees and feels and moves, but thinks and speaks; whose mind can go back to the time when the earth was without form, and void, and forward to the time when it shall have grown old like a garment. Who can trace his way among the stars; who can utter his voice from continent to continent beneath the seas; who shows forth his creative power in poetry, eloquence and song, and whose aspirations mount up to the Infinite and the Eternal?

Thus we come back to the statement that on earth there is nothing great but man; and what gives man his supreme greatness is mind.

The mind has been divided into three general classes of faculties—the faculty of knowing, of feeling, and of willing. These three classes of faculties have been called the intellect, the sensibility and the will. Every capacity or power which the mind can exercise is found to fall under one of three heads. Every act of the soul is an act of knowing, feeling or willing; an act of the intellect, the sensibility or the will.

The mind is developed by culture. Its powers are strengthened and made to act with vigor and skill by judicious training. Without such training the mind may remain either comparatively inert, or its actions may conflict with the moral laws of mental development, and fail to produce the best fruits of culture and knowledge. The mind possesses a variety of powers, and each of these powers operates with different material and has an activity peculiar to itself. What would be best for one faculty would not be appropriate for another. We need concrete objects for the perception, facts for the memory, abstract truths for the judgment and reasoning; beauty for the imagination, moral truths for the conscience, etc. Man possesses a multitude of capacities and powers, all of which contribute to his well-being and his dignity. These powers are so related that they may be unfolded in very nearly equal proportions and harmoniously blended in the final results of culture. The course of study in the college is arranged to develop all these faculties, and the student studies science and art, literature and mathematics, to develop judgment, reasoning, intuition, the true, the beautiful and the good.

A knowledge of the nature of the mind is of value in every vocation. It gives one a knowledge of human nature; and such a knowledge is a key to success in every occupation depending on the influencing of men.

The psysician who understands the mental peculiarities of his patients, and the relation of the mind to the bodily functions can often do more for the cure of the disease through mental influence than by the administering of medicines.

The lawyer wins or loses his case according as he knows how to influence the judgment and sensibilities of judge and jury.

The minister moves the hearts and wills of his congregation better when he understands the hidden springs of thought and emotion.

The orator leads the opinions and arouses the passions of the people when he is familiar with the secret working of the faculties of the human soul.

And so in every vocation where mind comes in contact with mind, the man who understands the law of human nature and influence is usually the man of influence and success. Perception is the basis of all knowledge; all mental activities begin in the senses. Without the power of sense-perception, it is to be doubted if we could attain to any knowledge whatever. If the college graduate has these senses developed no more boundless field for their application and continued development can be found than the farm. Here he can be near to Nature's heart, and can read her secrets by her ever-varying work. Air, earth and sky are open books for his perusal. Here he can give full scope to his memory and imagination. The intense application by which he strengthened his memory will now serve him in many details.

What a source of pleasure the trained imagination can be to the graduate on the farm.

The creative power of the imagination is especially seen in the fine arts. In the imagination of the poet arises visions of lovliness such as no mortal eye has ever seen, and it bodies them forth in the living words of the tender sonnet, the stirring drama or the sublime epic.

The imagination of the sculptor sees forms of beauty sleeping in cold blocks of marble, and with hammer and chisel he cuts away the rubbish which imprisons his ideal, and there stands before us a form of lovliness, which commands the admiration of the world.

This faculty is of benefit not only to the poet, the artist and the orator, but to every mind. It gives a light and beauty to the incidences of life that might otherwise be dry, sober and repulsive. It gilds the present with an ideal beauty, paints the future with hues of joy and brightness, hangs the star of hope in the sky of coming manhood and enables us to look beyond the darkness of the grave, and catch glimpses of the bliss and beauty of the life to come.

Life would often be dull and dreary, and heaven little more than an abstraction were it not for the bright visions of joy this faculty reveals to us. In like manner we might describe every faculty of the mind in its relation to nature and the farm; but time forbids.

The graduate's knowledge of geography and history will enable him to read intelligently the happenings of the world as chronicled by the daily press. Then his botany, philosophy, physiology, chemistry, geology, natural history, all of science, art and literature will be helpful to him in making the most out of the soil and the condition of the elements, besides being a constant source of pleasure to have the power to understand these secret forces of nature and man. If he has taken an agriculture course he can find ready employment at good wages. Such positions are always open to the skillful energetic applicant.

If he has means so as to own a farm of his own, he can direct his efforts so as to produce the best results with the least cost and exertion. As a member of society he can have ample opportunity to use his literature, logic, grammar, his understanding, reason and judgment, and can be a power for good in his community. It is impossible to estimate the power which wisdom and skill may display in the growth of farm products. If that man is called a benefactor who makes two blades of grass grow where only one grew before, much more is he who perfects stalk and ear to its climax of development. The future has in store surprising revelations. Nature unfolds her secrets only to those who live near her heart. Farmers study to elevate your calling, appreciate your privileges, impress upon your sons and daughters the dignity and nobility of brawn and muscle. Tell them of the grand achievements possible in making the country homes the brightest ornaments of our national greatness.

We stand at the entrance of the twentieth century. We hear the tramping feet of coming millions. The fertility of the soil, touched by the magic power of your wisdom and skill, must be the source of their sustenance. The sciences, the arts, all the institutions, are under your fostering care. Awake to your mighty responsibilities, and nations yet unborn will rise up and call you blessed.

NATURE STUDY IN THE COMMON SCHOOLS.

MISS JOIE MEEKER, CROWN POINT, IND.

[Read at Lake County Farmers' Institute.]

"Knowledge never learned of schools,
Of the wild flower's time and place,
Flight of fowl and habitude,
Of the tenants of the wood;
How the tortoise bears his shell,
How the woodchuck digs his cell,
And the ground-mole sinks his well;
For eschewing books and tasks,
Nature answers all he asks.
Hand in hand with her he walks,
Face to face with her he talks."

Nature study is the most natural study. The common schools of our country, recognizing this, have made rapid progress within the last decade in correlation and organization in the subject-matter of the different branches of study. Until a few years ago nature study or science was thought to be one of the studies belonging to the high school, college or university. Everything seemed to center about the earth; but the new education transforms everything. Following its teachings, we readily obey Bryant, who says:

"Go forth under the open sky and list
To Nature's teaching."

Realizing it is best to acquire a knowledge of things close by us first, then of those farther off.

This study of nature is comparatively new in American schools. It really is in the experimental stage. The schools of our own State have been the storm center for discovery and dissemination of this truth, and they have contributed largely in bringing the experiment to its present stage of advancement.

In approaching this subject the first question that no doubt enters your minds is, "Why have we begun this study of nature in the elementary schools?" If there were fewer things, as in the days of the three R's, the answer would be comparatively simple; but now it is three R's and all nature. Agassiz says, "Children are born naturalists." Then why should nature study be suddenly ended? Why, indeed, should the child who, since its birth, has grown familiar with, and has found his delight in close companionship with things of life and beauty, with birds and flowers, with dogs and bugs, and stones, and brooks, and sky, and air, why, we ask, should such a life which has been the school in which he has learned more of expression in word and action, in which he has developed more intense interest and power of attention than he will ever again develop in the same time, be suddenly ended, and he be introduced into a world of hieroglyphics, of sound and form, with the restraints of discipline that belong to the average school room? No, rather let school be a natural continuation of child life, with such additions and modifications as are required by the growing powers of the child.

We then continue studying nature in the first grades, taking the child where he is and making use of the material he already has. How soon the little one begins to observe more carefully, seeking to know the why and to learn the new names. What is he more interested in than his pets? Here the teacher can often aid him by suggesting hints about the care, food, shelter, etc., of these pets; then in protecting and making the birds happier, in watching and learning about the plants that he loves. His interest grows stronger. He begins to understand and love the old, old story that is ever new. He reads it in his own language. The teacher but turns the leaves. In his freedom and joy he is like the bird itself. These two types of life, the child and the bird, brought into such close and loving contact, form a union which makes

"The sad old world forget awhile
Its sorrows for their sakes."

We continue this work through the eight grades, still placing nature's great open volume before the child and studying with him the beautiful and wonderful pictures found upon its pages. We read with him, little by little, the marvelous serial story. We learn with him, bit by bit, its chapters on geology, chemistry, botany and animal life. We learn slowly with him the lessons in astronomy and history which the pages reveal. Above all we learn, still with the child, the harder lessons of order, law, patience, industry and of the tenderest love, with which the book of Nature is filled. We take for companions and friends Hiawatha, Robert of Lincoln, The Barefoot Boy, Sir Launfal, and scores of others belonging to their family. "We set a child in the midst." We begin with the senses and trust the work will not stop until the soul is reached and harmonized "from the creation to the Creator." In determining the form of expression to be used in our nature work, we call poetry and music to our aid to express emotion, joy and pleasure; we sing about the seasons and the happy birds. Language we use to tell about life and action, and use the development of the buds, the germination of seeds, the beauty and work of leaves and flowers. We use prints of the paintings of our great artists to emphasize the beautiful. Whatever the form of expression used, we endeavor to have all work, first, individual and truthful; second, clear and orderly.

With the child's interest thus stimulated, and in harmony with the general aim of all education, the purpose of nature study is to develop a "character with the ability and purpose to do good and with the power to create happiness." Now this purpose in nature study demands that the material selected be classed as follows: First, it should comprise those things of greatest importance to man's success or failure, which are adapted to the interest of the children of the different grades. Second, as life appeals most strongly to children, most of the material should be plants and animals. Third, the material chosen should be found in such quantities that each child can study it individually.

This material having been selected, some of it may be brought into the schoolroom or home under the direction of the teacher or parent. Much of the material can be studied in the fields or woods; these field lessons, like other lessons, being carefully planned beforehand.

The school garden is almost indispensable in true nature study. Why are we so behind in this garden movement? It began in Europe in 1837, and now gardens are maintained in connection with the schools where children are trained along the lines of pruning, budding and grafting trees; plowing, hoeing, fertilizing land; hiving bees, raising silk, etc. The movement has been inaugurated in Indiana, although school gardens have been maintained in the New England States since 1891. The influence of such study can not but teach respect for farm life and work and thus help to keep the young people in the country and check the dangerous overgrowth of the city. Love of and respect for nature will ennoble and dignify farm life. Why can not Lake County come to the front? At least we can plant vines, ferns and flowers around our schoolhouses and make them more beautiful. Who can tell what such an influence will have on the children?

Let us keep in touch with child life and nature. Let us have eyes that see, ears that hear, and understanding hearts, so we can say with Holmes:

"Build thee more stately mansions, O my soul,
As the swift seasons roll!
Leave thy low-vaulted past!
Let each new temple, nobler than the last,
Shut thee from heaven with a dome more vast,
Till thou at length art free,
Leaving thine outgrown shell by Life's unresting sea."

WHY HAVE A FARMERS' INSTITUTE?

SEBASTIAN DE MOTTE, OTWELL, IND.

[Read before the Pike County Institute.]

After the fall of man in the Garden of Eden, the Lord said unto Adam, "In the sweat of thy face shalt thou eat bread;" and when He banished him from the garden He sent him forth to till the ground, and from thenceforth it has been the aim of the law that man should win his bread by the sweat of his brow. Therefore, it behooves you and I to study the best methods of tilling the fields and caring for the flocks and herds.

The farmer furnishes the necessities of life. On his toil the prosperity of the world rests, and upon his products the entire human family are dependent for existence. Farming is the basis of our natural wealth and greatness. By its products the success or failure of all other industries are measured. Nothing so threatens the peace of the world as famine. Bloody wars have broken in wild alarm, battlefires have burned on innumerable hills in all history and the world witnessed the bloodshed, confident that greater strife could never be. But let universal famine impend and all the mighty battles of the past were but mere bubbles in comparison to the warfare that will ensue for existence, for all that a man hath will he give for his life. Therefore, is it not absolutely necessary that better methods of agriculture in its every phase should be carefully studied by every one in that vocation? In knowledge there is power. It is ofttimes better to know how to do a thing than to be able to do it. The farmer must keep abreast of the times or go to the rear and stay there. The success of any industry largely depends on the intelligence, integrity and co-operation of its forces. The methods that our forefathers used in tilling the soil and the crude machinery which they used will no longer bring success. We must use better methods. We must have better machinery and we must keep better stock or fail financially. Muscle farming can no longer compete with brain farming. The great problem of clearing the fields that confronted our forefathers has been superseded by a much greater one and that of bringing the same impoverished fields up to a state of fertility that they will grow a profitable crop instead of an unprofitable one. The coming together of the people of any industry for the purpose of studying better methods of doing business in their profession of life has been so beneficial and so inspiring that today there is no vocation of life that is without its councils. Lawyers have them, doctors have them, bankers have them, and are benefited by them. Why not the farmer? I pity the man or woman that is so narrow-minded or so selfconceited that they cannot be benefited by the experience of others. In union there is strength. Had it not been so the different States of our nation would never have joined together in one great union making it one of the greatest nations of the earth. Again, had it not been so, there would be no church societies, no political parties, no lodges. The farmers' institute is one of the best means in uniting the members of agriculture in one common purpose. It is also the quickest means of reaching the masses of people and by far the cheapest method of coming in direct communication with those that most need it.

In the last ten years, with institutes, agriculture has made more advancements than any fifteen years previous without them. At the end of ten years of farmers' institutes we find them more numerous, creating more interest and drawing much larger crowds. Had they been of no benefit to the farmer today they would be out of existence. It has been largely through the influence of the institute that farmers of today live better, think more, read more, keep better stock, have better roads, telephones, rural mail and live on a much better plane of life socially.

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